

**ANNUAL REPORT**

OF THE

**Department of Lands and Mines**

OF THE

**PROVINCE OF ALBERTA**

FOR THE

**Fiscal Year ended March 31st, 1934**

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PUBLISHED BY ORDER OF THE LEGISLATIVE ASSEMBLY

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1935



*To the Honourable W. L. Walsh,  
Lieutenant-Governor of the Province of Alberta.*

SIR:

I have the honour to submit herewith the report of the Department of Lands and Mines for the fiscal year ended March 31st, 1934.

I have the honour to be, Sir,

Your obedient servant,

HUGH W. ALLEN,

*Minister of Lands and Mines.*

EDMONTON, December 14th, 1934.



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CHIEF OFFICERS,  
DEPARTMENT OF LANDS AND MINES  
March 31st, 1934

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Honourable R. G. Reid .....*Minister of Lands and Mines*  
John Harvie .....*Deputy Minister of Lands and Mines*  
T. C. Rankine .....*Departmental Solicitor*  
D. H. Boles .....*Director of Lands*  
W. Calder .....*Director of Petroleum and Natural Gas*  
T. F. Blefgen .....*Director of Forestry*  
J. A. Hutchison .....*Assistant Director of Forestry*  
R. T. Rodd .....*Director of Fisheries*  
A. A. Millar .....*Chief Inspector, The Coal-mines Regulation Act*  
I. N. McKinnon .....*Chief Accountant*  
J. W. Stafford .....*Agent, Edmonton Land Agency*  
M. Gossip .....*Agent, Calgary Land Agency*  
R. Cruickshank .....*Agent, Lethbridge Land Agency*  
J. J. E. Clarke .....*Agent, Peace River Land Agency*  
R. J. Dean .....*Inspector of Revenue*  
F. W. Neilson .....*Chief Timber Inspector*  
T. W. Dalkin .....*Technical Division*  
A. Helmer .....*Supervisor of Grazing*  
J. L. Irwin .....*Statistician*





# REPORT

## OF THE

### Department of Lands and Mines

1933-34

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Honourable R. G. Reid,  
Minister of Lands and Mines,  
Edmonton.

SIR:

I have the honour to submit the fourth annual report of the Department of Lands and Mines for the fiscal year ended March 31st, 1934.

It is gratifying to be able to point at last to a noticeable and really favourable change in the economic situation with its consequent effect on the business of this Department during the period under review.

Surplus on income account shows an increase of \$185,072.04 over last year's figures. Under this heading is disclosed also an increase in revenue of \$75,618.14, a decrease in expenditure of \$109,453.90 and a departmental surplus for the year of \$474,688.19.

Other improvements are apparent in the general situation and the following increases are also reported:—petroleum production, 270,391 barrels; natural gas consumption, 284,993,000 cubic feet; timber revenue, net increase, \$30,111.42; commercial fish production, 911,142 pounds with value of this increase to fishermen, \$36,684.70 and value as marketed, \$69,946.73.

Coal production shows little change from the preceding period, a small decrease of 155,246 tons being reported for the calendar year, 1934.

#### PROVINCIAL LANDS ADMINISTRATION

*School Lands Purchases.*—A relief measure introduced during this period for the benefit of school lands-purchasers, was the crediting of an extra dollar for every dollar paid on arrears or current interest. This arrangement, made retroactive as from September 1st, 1932, is to continue in force until March 31st, 1935.

Another feature of considerable importance to the purchasers of school lands became effective as a result of an amendment to The Provincial Lands Act, 1933, Cap. 24, Sec. 44a. Under this enactment a purchaser might surrender part of the land under agreement of sale and reduce the liability of the purchase price under such agreement to the amount payable on the land retained. Moneys paid under the original agreement of sale, exclusive of interest, are to be accepted as having been paid on the liability so reduced, providing, however, that no payments made prior to the new agreement are to be refunded.

*Closing of Grande Prairie Land Agency.*—On March 31st, 1933, the office of the Grande Prairie Land Agency was closed, the staff and office impedimenta being transferred to Peace River, from which centre the two areas for the time being are to be jointly administered. The move was decided upon partly as an economic measure due to the times and partly with a view to

centralization of the two districts from one office, a sub-agency being established to replace the former agency at Grande Prairie.

*Opening of Restricted Area.*—The general area south of township 42, belonging to the Calgary and Lethbridge Land Agency districts which was restricted from settlement in September, 1931, was opened again on May 1st, 1933.

This area, with the exception of those lands in the Calgary Agency district lying within the boundaries as designated in the amended schedule, Order in Council No. 308/33, April 22nd, 1933, was opened for homestead, second homestead or soldier grant to any applicants eligible for same providing that they were in permanent residence and conducting farming operations upon farms of not less than eighty acres situated within a distance of nine miles in a direct line from the land for which application was made. In addition to this, holders of pre-emptions were given the privilege of abandoning these lands and securing them once again as second homesteads.

*Trend of Settlement.*—An increase of 207 in the total of first and second homestead entries and soldier grants is shown for the year which was due principally to the reopening of the formerly restricted areas in the southern portion of the Province.

This increase was not, however, the result of any new settlement. Much of it, the majority in fact, merely represented a change in the status under which Crown lands in this particular area were held from the viewpoint of homesteads being secured by permanent residents within the nine-mile area or the conversion of pre-emptions into second homesteads.

A noticeable decrease is shown in the total entries granted in the northern part of the Province amounting to 126 in the Edmonton Agency district and 514 in Peace River. The latter was due very largely to hard times and lack of capital, settlers wishing to locate in the available areas in the north being often unable to finance the general question of moving their families, goods and chattels to distant points.

The bulk of settlement for the year was in the country west of Edmonton and south of Evansburg in Rocky Rapids, Drayton Valley and Buck Lake areas down to the southern boundary of the Edmonton Land Agency district in township 43.

*Homestead Entries.*—First and second homestead entries and soldier grants during the year totalled 3,706 covering an area of approximately 592,960 acres as compared with 3,499, representing an approximate acreage of 559,840 for the previous fiscal year. The total of 3,706 for this period comprises 2,984 first homesteads, 696 second homesteads and 26 soldier grants. Homestead entries granted to women totalled 1,011, which figure is included in the first homestead total of 2,984. Persons holding previous entries, cancelled in favour of the present ones held which are included in this first homestead total of 2,984, numbered 462.

The total of 2,984 persons to whom first homestead entries were granted, added to their relatives and dependents, comprised a grant total of 9,550 souls. Of these, 3,303 (34.59%) were Canadians, 1,216 (12.73%) were from Great Britain and British Dominions, 1,611 (16.86%) from the United States and 3,420 (35.82%) from other countries, chiefly European.

In comparing this year's total of 2,984 first homestead entries with last year's of 3,112, a decrease of 128 is shown. On the other hand, this year's total of 9,550 souls, comprising persons making first homestead entries, together with their relatives and dependents, reveals an increase of 403 in comparison with last year's total of 9,147.

Comparative statements showing totals of homestead entries and soldier grants together with statistical summary of nationalities from 1931 to 1934 are given herewith. Fuller details of this information appear in the land agents' and chief accountant's section of this report and in similar sections of the annual reports for preceding years.

## HOMESTEAD ENTRIES GRANTED

Fiscal Year	Homesteads	Second Homesteads	Soldier Grants	Total	Homesteads Granted to Women
*1930-31 .....	3,042	557	149	3,748	.....
1931-32 .....	3,876	522	30	4,428	1,521
1932-33 .....	3,112	358	29	3,499	976
1933-34 .....	2,984	696	26	3,706	1,011
Totals .....	<u>13,014</u>	<u>2,133</u>	<u>234</u>	<u>15,381</u>	<u>3,508</u>
	Decrease	Increase	Decrease	Increase	Increase
This year in comparison with last .....	128	338	3	207	35

\*Six months to March 31.

NOTE.—Homesteads for women were not available until 1932. The total number as shown in the above statement is included in the first homestead total.

# HOMESTEAD ENTRIES—STATISTICAL SUMMARY OF NATIONALITIES

FISCAL YEAR	CANADA			GREAT BRITAIN AND BRITISH DOMINIONS			UNITED STATES			OTHER COUNTRIES			TOTAL
	Number of Homestead Entries	Number of Souls	Number of Homestead Entries	Number of Souls	Number of Homestead Entries	Number of Souls	Number of Homestead Entries	Number of Souls	Number of Homestead Entries	Number of Souls	Number of Homestead Entries	Number of Souls	
*1930-31	1,088	2,184 (30.89%)	261	620 ( 8.77%)	386	948 (13.41%)	1,307	3,317 (46.93%)	3,042	7,069			
1931-32	1,649	4,559 (37.46%)	393	1,238 (10.18%)	733	2,664 (21.89%)	1,101	3,708 (30.47%)	3,876	12,169			
1932-33	1,237	3,074 (33.60%)	300	967 (10.58%)	456	1,627 (17.78%)	1,119	3,479 (38.04%)	3,112	9,147			
1933-34	1,208	3,303 (34.59%)	345	1,216 (12.73%)	444	1,611 (16.86%)	987	3,420 (35.82%)	2,984	9,550			
TOTALS	5,182	13,120 (34.60%)	1,299	4,041 (10.66%)	2,019	6,850 (18.04%)	4,514	13,924 (36.70%)	13,014	37,935			

\*Six months to March 31.

THIS YEAR IN COMPARISON WITH LAST

	Decrease	Increase	Decrease	Increase	Decrease	Increase
1	29	229	45	249	12	16
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NOTE: Number of people includes persons to whom first homestead entries were granted together with their relatives and dependents.

NOTE. Number of souls includes persons to whom first homestead entries were granted together with their relatives and dependents.

## WORK OF THE TECHNICAL DIVISION

*Records.*—The transfer of information from Ottawa since the publication of the last annual report has progressed favourably and details covering such information have been set up in the new plan records of the Technical Division.

Records received dealing with minerals are now completed and a start has been made to check fiats for patent with a view to plotting all underrights which previously had been alienated. Until this search is finished this particular phase of the work will not be complete.

A new set of plan records has been arranged showing all licensed and permit timber berths by township plan. Work has also been started on forestry records which will show by township the boundaries of reserves and forest service improvements as they are made from time to time.

Grazing records are now complete and show all grazing leases in the Province by township diagram. A duplicate set of these records has been forwarded to the Supervisor of Grazing at Calgary together with a numerical index to the ranches.

With reference to stock watering reserves, orders in council during this period were passed releasing 6,790.79 acres, more or less, for other purposes, as these areas were no longer needed in this connection.

Sets of records showing an index to the surveyed roadways affecting Crown lands have been made and 105 plans of surveys of new road diversions affecting 433 parcels of land were recorded. Regarding the cancellations of numerous roadways during the year, the areas in each case were added to the existing sale, entry or lease.

A complete check is now being made with regard to the many transmission lines located upon government lands, permission for which had never been obtained from the Dominion Government and considerable correspondence in this connection has been entered into with power and utility companies with a view to the establishment of legal rights.

*Issue of Notifications.*—The number of notifications issued and amount of acreage covered thereby since October 1st, 1930, date of the natural resources transfer from Dominion to Provincial Government control, are as follows:—

## NOTIFICATIONS ISSUED

Fiscal Year	Number of Notifications	Area, Acres
*1930-31 .....	23	3,019.71
1931-32 .....	784	111,424.478
1932-33 .....	1,260	178,887.233
1933-34 .....	1,106	165,224.553
Totals .....	3,173	458,555.974
Decreases this year in comparison with last .....	154	13,662.680

\*Six months to March 31.

With regard to notifications covered by sales, an area of 2,562.13 acres, more or less, was patented to the different drainage and irrigation districts and certain exchanges of land were also effected in the Tilley East area.

With regard to certain lands held by the Soldier Settlement Board, 34 patents covering an area of 5,178.34 acres were, in accordance with the agreement dealing with the transfer of the natural resources, issued direct by the Dominion Government.

Certain tracts of land comprising a total of 8,678.32 acres held by the Director of Soldier Settlement as agent of the Crown in the right of the Dominion, were, on the other hand, transferred to the Province after the lands in question had been offered for sale by public tender without results.

An area covering 8,750.54 acres, more or less, made available for administration through tax recovery proceedings, was transferred to this Department by the Department of Municipal Affairs.

*Statistical Maps.*—The Technical Division has now a complete stock of township plans. During the year a total of 37,200 was received from the Department of the Interior for the records in addition to maps of various descriptions.

A very complete supply of maps is now available for which there is an increasingly steady demand which includes continual requests from distant points from applicants interested in homesteading, prospecting, mining and hunting.

*Soil Surveys.*—The preparation of a comprehensive set of soil survey records has now been prepared which contains reports of surveys and maps made by both the Dominion Government and the University of Alberta.

The different classifications of soils are shown by colour in a large map of the Province which is altered from time to time to incorporate into the system new surveys as they are made. With the inclusion of this information amongst the records the necessity of actual inspection upon the ground becomes in many cases unnecessary. Homesteaders and the public generally are frequently availing themselves of this particular service.

#### GRAZING

The number of applications for grazing lands received, the number reported on and miles travelled to make investigations and inspections for the fiscal year ended March 31, 1934, were as follows:

Applications received .....	270
Renewal applications received .....	123
Total.....	393
Applications reported on .....	227
Renewal applications reported on .....	83
Special Reports .....	72
Total.....	383

#### MILEAGE

Automobile .....	9,903
Train .....	2,997
Total.....	12,900

#### APPLICATIONS AND RENEWALS FOR GRAZING LANDS

Fiscal Year .....	
1931-32 .....	741
1932-33 .....	259
1933-34 .....	393
Total.....	1,393
Increase this year in comparison with last.....	134

#### PETROLEUM AND NATURAL GAS

*Extended and New Development.*—The proven area in the southern portion of the Turner Valley field started early in the summer on a programme of extended development, activity being confined principally to section 28, township 18, range 2, west of the fifth meridian. Preliminary construction was also started at two locations in the foothills in which both the geological and topographical indications give promise of new producing areas.

*Aldersyde Area.*—The Ranchmen's Gas and Oil Company's well No. 1 at Aldersyde after a lengthy period of drilling appears to be nearing production, the depth at March 31st, 1934, being 6,260 feet where encouraging indications of gas were encountered.

The potentialities of this area have for several years been favourably considered by the divisional staff. Confirming these views, a memorandum and sectional plan prepared by Mr. Owen of the divisional staff during 1932, but not made public until now, are attached as Exhibits "D" and "E" to the Petroleum and Natural Gas Division's section of this report.

*Natural Gas Consumption.*—As natural gas consumption was maintained during this period at approximately the same quantity as in previous years and as no new development has arisen to discover reserves of gas, it is presumed that gas well operators are satisfied that the present wells contain ample reserves for all requirements.

NATURAL GAS CONSUMPTION		Cubic Feet
Fiscal Year		
*1929-30	.....	23,228,637,000
†1930-31	.....	23,312,006,000
1931-32	.....	18,327,139,000
1932-33	.....	16,061,383,000
1933-34	.....	16,346,376,000
Total	.....	97,275,541,000
Increase this year in comparison with last	.....	284,993,000

\*Under federal administration.

†Under federal administration to October 1st, 1930, and under provincial following that date.

*Increase in Petroleum Production.*—An increase of more than 24% over last year's total production of all classes of oil is reported for this year, due principally to the completion of four new wells in Turner Valley and also to the greater recovery of naphtha as a result of operations of the newly erected absorption plant.

PETROLEUM PRODUCTION				
Fiscal Year	Naphtha (Barrels)	Light Crude Oil (Barrels)	Heavy Crude Oil (Barrels)	Total (Barrels)
*1930-31	1,496,457	104,183	13,562	1,614,202
1931-32	1,143,875	86,000	16,453	1,246,328
1932-33	810,958	52,238	7,886	871,082
1933-34	1,082,816	54,048	4,609	1,141,473
Totals	4,534,106	296,469	42,510	4,873,085
	Increase	Increase	Decrease	Increase
This year in comparison with last	271,858	1,810	3,277	270,391

\*Under federal administration to October 1st, 1930, and under provincial following that date.

*Absorption Plant.*—The absorption plant, erected by the Royelite Company during the year and designed for a daily through-put of seventy-five to eighty million cubic feet of gas, has provided a most successful enterprise. So successful indeed that extensions have already been added to it and the rumour that a second plant of similar capacity is to be erected in the south end of Turner Valley is given general credence.

Main features of the general plant which should prove of interest, are as follows:

- (1) Four standard separators to remove all possible naphtha before the gas enters the absorption towers;
- (2) Three absorption towers, five feet by fifty feet high.
- (3) Four separators to remove any absorption oil that may pass through with the stripped gas from the absorption towers;
- (4) Rectifying plant for removing naphtha from the absorption oil and regenerating the latter for re-use.

The only mechanical appliances in the building are sundry pumps used in the rectifying plant for pumping the recovered naphtha and the regenerated absorption oil into tanks. The gas is processed entirely without mechanical aid,

the designers, it being assumed, relying on well pressures remaining sufficiently high for some time to come to propel the gas through the absorption towers, fractionating plant and scrubbers and thence to points of consumption.

*Testing the Wells.*—The testing of wells in Turner Valley, initiated in 1931 and carried on by the Turner Valley Gas Conservation Board in 1932, was continued by the divisional staff during the period of this report.

As all wells could not be tested simultaneously the Valley was sub-divided into areas to permit the work being expeditiously carried out.

*Well Pressures.*—The tests showed a marked decline in pressure in all the older producing wells of the Valley, a fact which would seem to threaten a still further reduction of such pressure if excessive withdrawals of gas continued to be in evidence and revealing the possibility of the installation of mechanical equipment at a future date for raising the liquid product to the surface.

Well test reports submitted this year by the City of Medicine Hat showed, however, an appreciable increase in the gas pressure of wells in that area. From 1929 to 1930 this situation was considerably reversed, pressures in that area declining to such an extent as to offer a very real menace to the field. Protective measures were then taken by the Petroleum and Natural Gas Division resulting in the satisfactory reports now on hand regarding this particular situation.

In the Viking field reports of water intrusion through defective casings have been received which may result in curtailing the useful life of wells in that area, and it is possible that similar protective measures, as carried out in the Medicine Hat field, may become necessary.

*Fort McMurray Tar Sands.*—A special tour of inspection was made during the year of developments carried out in the tar sand area at Fort McMurray. An illustrated report covering the tour appears in the Petroleum and Natural Gas Division's section of this publication.

*Exhibits.*—At the close of the Division's report the following exhibits are attached:—

EXHIBIT A.—Oil and gas production for the fiscal year;

EXHIBIT B.—Statement of Turner Valley allowable withdrawals of gas as intimated to operators, April 3rd, 1933;

EXHIBIT C.—Wells completed during the fiscal year or still in course of drilling at its close;

EXHIBIT D.—Memorandum on oil and gas potentialities in the Aldersyde area by R. M. S. Owen, Petroleum and Natural Gas Division;

EXHIBIT E.—Graph showing generalized structure section from Turner Valley to Aldersyde;

EXHIBIT F.—Map of the oil and gas fields of Alberta.

#### FOREST SERVICE

*Sub-Agency Duties.*—An enlargement of the Forest Service's responsibilities became necessary during this period by the arrangement whereby timber inspectors should undertake, within the divisions for which they were responsible, the additional duties of sub-agency land office services. With the abolition of the majority of sub-agencies throughout the province, instituted as a policy of economy, it became necessary to add these new duties to officers of the Service with a view to continuance of sub-agency work. While carrying out the economy intended this new work necessarily and unavoidably interfered with the inspectors' regular duties.



*Fire Season.*—The fire season during the year was on the whole a normal one. Hazardous conditions materialized in certain large sections of the Province and a few very destructive fires resulted during which control was both difficult and expensive.

Weather conditions in Alberta year by year are extremely variable and some section of the Province will usually experience a combination of situations which will produce a fire hazard. Only in exceptional years, such as in 1932, is Alberta comparatively free from the menace of destructive fires.

*Number of Fires.*—Fires during the year within and outside forest reserves numbered 288 which burned over an area of 93,765 acres of which 30,955.87 acres were non-forested lands. Total loss of timber and other property amounted to \$195,805.36 with a total cost in fire suppression of \$35,381.67.

A summary of fire losses within and outside Alberta forest reserves from October 1st, 1930, to December 31st, 1933, is given on the next page.

## SUMMARY OF FIRE LOSSES WITHIN ALBERTA FOREST RESERVES

Period	Number of Fires	Cost of Suppression	Area (In Acres)	Salvable Timber *M.f.b.m.	Salvable Timber (Cords)	Unsalvable Timber *M.f.b.m.	Unsalvable Timber (Cords)	Total Loss
October 1, 1930 to March 31, 1931.....	9	\$ 551.67	41,925	.....	.....	2.00	129.00	\$ 71.69
April 1, 1931 to December 31, 1931.....	31	17,624.12	52,218.05	2,370.5	3,086	6,295.73	111,599.00	154,651.47
January 1, 1932 to December 31, 1932.....	32	3,491.04	25,552.75	8.00	15,863	3,845.00	1,005.60	8,790.73
January 1, 1933 to December 31, 1933.....	39	18,409.92	29,275.88	26.75	1,201	19,188.25	108,414.00	95,796.93
TOTALS.....	111	\$40,076.75	84,091.605	2,405.25	20,150	29,330.98	221,147.60	\$259,310.82

## SUMMARY OF FIRE LOSSES OUTSIDE ALBERTA FOREST RESERVES

Period	Number of Fires	Cost of Suppression	Area (In Acres)	Salvable Timber *M.f.b.m.	Salvable Timber (Cords)	Unsalvable Timber *M.f.b.m.	Unsalvable Timber (Cords)	Total Loss
October 1, 1930 to March 31, 1931.....	47	\$ 686.64	11,145.19	155.00	.....	3.75	.....	\$ 79,950.85
April 1, 1931 to December 31, 1931.....	591	82,088.89	552,658.07	134,536.00	104,199.00	122,690.5	684,625.5	712,835.79
January 1, 1932 to December 31, 1932.....	347	15,320.51	133,562.14	274.75	12,215.00	40,627.15	132,743.00	152,085.58
January 1, 1933 to December 31, 1933.....	249	16,971.75	64,489.12	4,383.50	13,953.50	41,694.50	59,545.00	100,008.43
TOTALS.....	1,234	\$115,067.79	761,854.52	139,349.25	130,367.50	205,015.90	876,913.50	\$1,044,880.65

## SUMMARY OF FIRE LOSSES WITHIN AND OUTSIDE ALBERTA FOREST RESERVES

Period	Number of Fires	Cost of Suppression	Area (In Acres)	Salvable Timber *M.f.b.m.	Salvable Timber (Cords)	Unsalvable Timber *M.f.b.m.	Unsalvable Timber (Cords)	Total Loss
October 1, 1930 to March 31, 1931.....	56	\$ 1,238.31	11,187.115	155.00	.....	5.75	129.00	\$ 80,022.54
April 1, 1931 to December 31, 1931.....	622	99,713.01	604,876.12	136,906.5	107,285.00	123,986.23	796,224.5	867,187.26
January 1, 1932 to December 31, 1932.....	379	18,811.55	136,117.89	282.75	28,078.00	44,472.15	133,748.60	168,876.31
January 1, 1933 to December 31, 1933.....	288	35,381.67	93,765.00	4,410.25	15,154.50	60,882.75	167,999.00	195,805.36
TOTALS.....	1,345	\$155,144.54	845,946.125	141,754.50	150,517.50	234,346.88	1,098,061.10	\$1,304,191.47

\*M.f.b.m.—Thousand, feet board measure.

## FORESTRY REVENUE

Fiscal Years	*1930-31	1931-32	1932-33	1933-34	Total	This year in comparison with last	
						Increase	Decrease
Timber Permits .....	\$ 6,159.32	\$ 9,358.17	\$ 6,096.73	\$ 8,834.06	\$ 30,448.28	\$ 2,737.33	.....
Timber Seizures .....	5.00	105.46	23.80	43.33	177.79	169.72	.....
Timber Sales .....	18,416.68	16,809.66	9,748.78	15,881.44	60,856.56	6,132.66	.....
Grazing Permits .....	3,416.79	10,394.88	12,098.99	13,033.83	38,944.49	934.84	.....
Hay Permits .....	.....	264.25	208.00	207.91	680.16	.....	.....
Fishing Permits .....	.....	1,342.25	1,087.50	918.00	3,347.75	.....	.....
Surface Rentals .....	1,631.84	1,813.21	1,971.28	2,308.85	7,725.18	337.57	.....
Miscellaneous use Permits .....	218.98	818.08	805.90	947.23	2,371.21	141.33	.....
Sundry Revenue .....	.....	2,622.90	721.35	1,268.96	4,832.19	547.61	.....
TOTALS .....	\$ 29,848.61	\$ 43,528.86	\$ 32,762.33	\$ 43,443.81	\$149,583.61	\$ 10,851.07	\$ 169.59
					Net increase .....		
						\$ 10,681.48	

\*Six months to March 31.

NOTE: In 1930-31 year, "Timber Permits, \$6,159.32" and "Timber Sales, \$18,416.68" as given above, are included in the Revenue Statement of the Annual Report (Forestry Section) for that period in the net total appearing under heading of "Timber Permits, Sales, etc."

In 1931-32 year, total of "Timber Sales, \$16,809.66" includes "Application and Guarantee Deposits, \$2,101.50"; "Sundry Revenue, \$2,622.90" includes "Sale of Maps, \$9.55." These items are shown separately in the Annual Report (Forestry Section) for that period.

In 1933-34 year, total of "Timber Sales, \$15,881.44" represents totals of "Timber Sales, \$13,556.44" and "Timber Sale Applications and Guarantee Deposits, \$2,325.00" given separately in the Revenue Statement (Forestry Section) of this report.

*Unemployment Relief Camps.*—A few unemployment relief camps were continued in the southern portion of the Province in forest reserve area with the necessary supervision of work undertaken by officers of the Service.

*Forest Nursery.*—A continuation of nursery work, initiated in the fall of 1931 at Oliver, has led to necessary expansion. Oliver, though an ideal place for nursery development, is limited from the viewpoint of large scale operations. Arrangements were accordingly made for nursery activities similar to Oliver at other government institutions and a definite start was made at the Ponoka Mental Hospital and the Fort Saskatchewan and Lethbridge jails where a large number of seedlings from Oliver were set out in transplant beds as follows:

Ponoka Mental Hospital .....	35,000 lodgepole pine
Fort Saskatchewan Jail .....	75,000 " "
Lethbridge Jail .....	18,000 " "
	31,000 Scotch pine

Two-year old Russian poplars are now planted at twenty-five foot intervals on both sides of the highway between the Edmonton city limits and Oliver. The assistance of single, unemployed men was secured locally for this work.

A small model nursery and model farm shelter-belt are on the site of the forestry cabin at the Exhibition Grounds in Edmonton. After removal of the stock from the seed-beds the soil was thoroughly dug up and worked. Seeds of mountain ash, red oak and white elm were then planted.

*Grazing on Forest Reserves.*—Grazing resources during this period continued satisfactorily within the forest reserves. In the Crowsnest division of the Rocky Mountain Forest Reserve and the Cypress Hills Forest Reserve grazing utilization has almost reached the maximum carrying capacity of the range. From the Sheep River valley north grazing utilization is not intensive excepting in certain accessible districts.

#### FOREST RESERVES GRAZING REPORT

Fiscal Year	Number of		Number of Horses	Number of Cattle	Number of Mules	Number of Sheep
	Permits	Revenue				
*1930-31 .....	92	\$ 3,717.75	1,600	5,346	1	.....
1931-32 .....	456	10,394.88	3,417	15,041	.....	4,379
1932-33 .....	606	12,098.99	3,377	20,086	.....	7,465
1933-34 .....	493	13,033.83	3,185	20,230	.....	6,705
Totals.....	1,647	\$39,245.45	11,579	60,703	1	18,549
<hr/>						
	Decrease	Increase	Decrease	Increase		Decrease
This year in comparison with last .....	113	\$ 934.84	192	144	....	760

\*Six months to March 31.

*Lumber Manufactured.*—Lumber manufactured from timber cut by holders of licensed and permit timber berths on provincial lands totalled for this period 44,959,769 feet, board measure, to which there was added 290,551 feet, timber procured from school lands timber berths, whilst timber cut from timber sales on Alberta forest reserves scaled 2,289,048 feet, board measurement.

Conditions in the lumber industry during the year remained at practically the same level as that of the year preceding though an improvement in the market was noticeable, which was due principally to the exhaustion of stocks. Railway tie manufacturing operations increased with the necessity of making replacements.

## LUMBER MANUFACTURED

Fiscal Year	Licensed and Permit Timber Berths on Provincial Lands † (F.B.M.)	School Lands Timber Berths † (F.B.M.)	Timber cut from Timber Sales on Alberta Forest Reserves † (F.B.M.)
*1930-31 .....	20,002,746	627,534	2,849,528
1931-32 .....	36,562,070	1,454,022	808,000
1932-33 .....	45,375,413	277,631	2,372,779
1933-34 .....	44,959,769	290,551	2,289,048
Totals.....	146,899,998	2,649,738	8,319,355
	Decrease	Increase	Decrease
This year in comparison with last..	415,644	12,920	83,731
*Six months to March 31.			
†F.B.M.—Feet board measure.			

## FISHERIES

A decided improvement was evidenced during the year regarding the production of commercial fish. Markets were undoubtedly better with the result that gains were secured by both fishermen for their products and by operating companies. Angling in the mountain streams of the south was subjected to drouth conditions, but wherever possible stranded fish were rescued from shallow waters and transferred to safety. Trout fishing continued to improve, the fish being larger in size with bigger creels obtained. A slight decrease showed in coarse fish angling due partly to lower waters in some of the lakes which caused the fish to change their feeding grounds. Over abundance of natural feed also contributed to the situation by making artificial bait unattractive. Very little angling was done during the winter due to severe weather conditions.

*Commercial Production.*—Commercial fishing showed an increase of 911,142 pounds over the preceding year. The value of this increase to fishermen was \$36,684.70 and the value as marketed \$69,946.73. Prices reached a higher average, particularly during March, and reports of depleted stocks held in cold storage assisted materially in the sale of freshly caught fish.

Operations at Wabamun and Pigeon lakes were exceptionally good, the values of catches in both exceeding that of the previous year.

Lesser Slave Lake reported an excellent season for pickerel with the whitefish catch showing good results. An increase of 504,503 pounds in total production of fish of all species taken from this lake appears for this year. Indications show that the intensive restocking policies undertaken in previous years in this water have started to prove most beneficial.

An increase of 14,730 pounds in the catch of lake trout at Cold Lake is also shown but a slight decrease existed in whitefish production. Value to fishermen for the year's operations in this lake increased by \$1,263.44.

Production increases in the lakes of the Province containing commercial fish were generally evidenced and the value of restocking and subsequent conservation as an antidote to overfishing in certain waters was well demonstrated.

*Equipment.*—Fishermen this year were better equipped and operating companies, generally speaking, were more liberal with credit, due in a large measure to improved markets and keener competition among the buyers. A happier general situation prevailed throughout this period and most fishermen realized a clear profit for the first time in three years.

*Markets.*—Higher prices obtained throughout the different seasons. A continuation of the Department's campaign with regard to the careful handling of fish destined for markets, the use of clean boxes and insistence of proper distribution was productive of good results.

TOTAL AMOUNT OF FISH TAKEN FOR COMMERCIAL PURPOSES  
AND ITS VALUE

Fiscal Year	Weight (lbs.)	Value to Fishermen	Value as Marketed
*1930-31 .....	1,851,848	\$ 70,624.00	\$ 94,032.00
1931-32 .....	3,337,980	115,928.10	189,927.88
1932-33 .....	2,655,214	94,439.65	130,808.51
1933-34 .....	3,566,356	131,124.35	200,755.24
Totals .....	11,411,398	\$412,116.10	\$615,523.63
Increase this year in comparison with last .....	911,142	\$ 36,684.70	\$ 69,946.73

*Domestic Fishing.*—The number of licenses for domestic fishing increased 50 during the year, but a decrease appeared in the total catch of 46,750 pounds. Accurate returns are difficult to obtain owing to licensees usually having no method of weighing their fish. The estimated total amount taken was 411,250 pounds.

Residents of the Province, particularly farmers, will travel long distances to take advantage of obtaining their supply of fish by this method. The decrease reported is no doubt due to the close check kept during this period on those who previously had been inclined to take more fish than they actually required for domestic needs and disposing of the surplus product unlawfully.

*Indian Fishing.*—During the year Indian fishing increased once more by 50 additional permits which were issued with an additional poundage of 87,635. The estimated amount of all species taken by Indians for the year totalled 947,635 pounds.

*Angling.*—Trout fishing continued to improve and provided as hitherto the major sport for anglers. Loch Leven trout in the Red Deer River and its tributaries continued to be as noticeable in those waters as in the previous year, but rainbow and cutthroat species were the most popularly sought after.

With improved economic conditions angling will greatly increase and heavier stocking of the streams will become necessary. This will be especially required for the Edson district when the Jasper Highway is completed.

A regrettable incident was reported in the loss of all fish in Nakamun and Whitewood lakes as a result of severe winter weather with thick ice and snow. It is to be hoped that with restocking these waters will resume their importance as popular angling resorts.

The destroying of predacious fish in the game fish rivers of the Province continues to be an important section of the Division's conservation programme with regard to angling.

## TOTAL AMOUNT OF FISH TAKEN BY ANGLING

Fiscal Year	Game Fish (Trout, Rocky Mountain Whitefish and Arctic Grayling) Pounds	Other Fish (Goldeye, Pickerel, Perch and Pike) Pounds	Total Pounds
*1930-31 .....		1,225,000	1,225,000
1931-32 .....	457,975	1,756,919	2,214,894
1932-33 .....	422,638	1,260,034	1,682,672
1933-34 .....	355,000	1,133,730	1,488,730
TOTALS .....	1,235,613	5,375,683	6,611,296
Decreases this year in comparison with last....	67,638	126,304	193,942

\*Six months to March 31.

## TOTAL AMOUNT OF FISH OF ALL CLASSES TAKEN BY ANGLING AND NETS

Fiscal Year	Angling (Lbs.)	Domestic Fishing (Lbs.)	Indian Fishing (Lbs.)	Commercial Fishing (Lbs.)	Total (Lbs.)
*1930-31 .....	1,225,000	113,200	1,130,000	1,851,848	4,320,048
1931-32 .....	2,214,894	547,078	736,000	3,337,980	6,835,952
1932-33 .....	1,682,672	458,000	860,000	2,655,214	5,655,886
1933-34 .....	1,488,730	411,250	947,635	3,566,356	6,413,971
TOTALS .....	6,611,296	1,529,528	3,673,635	11,411,398	23,225,857

	Decrease	Decrease	Increase	Increase	Increase
This year in comparison with last .....	193,942	46,750	87,635	911,142	758,085

NOTE: The noticeable decrease in poundage under the heading of Indian fishing which followed the fiscal year 1930-31 is due to the fact that Indian fishing privileges were denied to half-breeds after the close of this period.

## TOTAL AMOUNT OF FISHING LICENSES AND PERMITS ISSUED

Licenses or Permits	*1930-31	1931-32	1932-33	1933-34	Total	This year in comparison with last	
Domestic licenses .....	566	555	458	508	2,087	50	....
Fishermen's and commercial licenses .....	1,033	755	598	746	3,132	148	....
Angling permits sold by Fisheries Division .....	7,731	6,533	4,963	4,823	24,050	....	140
Angling permits sold by Forestry Division .....		566	478	397	1,441	....	81
Indian permits .....	1,130	736	860	910	3,636	50	....
TOTALS .....	10,460	9,145	7,357	7,384	34,346	....	....

Total increase of fishing licenses and permits over last year,—27.

*Removal of Predacious and Undesirable Fish.*—This work has been carried on for many years but no record of numbers removed or destroyed was kept until 1928. From 1928 to 1932 inclusive the following fish belonging to this category were removed from trout waters:

Sucker, ling .....	67,150
Pike .....	94
Large Dolly Varden trout .....	214
TOTAL .....	67,458

The large Dolly Varden trout are of a cannibalistic nature and are therefore a serious menace to streams inhabited by game fish, making their removal a necessity.

During 1933 the following fish were removed from trout waters:

Sucker .....	113,620
Pike .....	865
Dolly Varden trout .....	61
TOTAL .....	114,546

*Rescue of Fish.*—As a result of the continued drought in the southern part of the Province the rescue of game fish by transfer to more suitable waters was carried out in those streams which threatened to become dry.

During the summer of 1933 the following fish were rescued in this manner:

Trout .....	1,258
Rocky Mountain whitefish .....	2,729
TOTAL .....	3,987

## SUMMARY OF CONFISCATIONS AND PROSECUTIONS FOR INFRACTIONS OF FISHERIES REGULATIONS

Fiscal Year	Confiscations	Prosecutions
*1930-31 .....	29	27
1931-32 .....	40	68
1932-33 .....	68	89
1933-34 .....	53	62
TOTALS .....	190	246
Decreases this year in comparison with last .....	15	27

\*Six months to March 31.

*Restocking of Fish.*—Restocking from the federal hatcheries of Waterton, Banff and Jasper of game fish fry and fingerlings into waters outside the national parks was carried out during the year as follows:

Hatchery	Fry	Advanced Fry	Fingerlings, No. 1
Waterton .....		437,000	313,275
Banff .....	90,000	330,015	860,560
Jasper .....		150,000	.....
<b>TOTALS</b> .....	<u>90,000</u>	<u>917,015</u>	<u>1,173,835</u>
Fry .....	90,000		
Advanced fry .....		917,015	
Fingerlings, No. 1 .....		1,173,835	
<b>Total distribution</b> .....		<u>2,180,850</u>	

*Restocking Arrangements for 1934.*—Arrangements have been made to distribute for 1934 a total of 2,650,000 rainbow, cutthroat, Loch Leven and speckled trout eyed eggs from the three federal hatcheries.

*Lesser Slave Lake Hatchery.*—The Lesser Slave Lake hatchery was not operated during the year except for the short period from April 1st, 1933, until the fry hatched during the winter were liberated.

#### FISH CULTURE—PLANTING OF GAME FISH FRY AND FINGERLINGS INTO PROVINCIAL WATERS OUTSIDE THE NATIONAL PARKS

Fiscal Year	Game Fish (Trout)	
	Number of Plantings	Number of Fry
*1930-31 .....	.....	.....
1931-32 .....	157	2,236,500
1932-33 .....	147	1,960,250
1933-34 .....	168	2,180,850
<b>TOTALS</b> .....	<u>472</u>	<u>6,377,600</u>
Increases this year in comparison with last .....	21	220,600

#### EXAMINATION AND STOCKING OF LAKES AND OTHER BODIES OF WATER

Fiscal Year	Lakes and other bodies of water examined regarding suitability for stocking	Number found		Lakes and other bodies of water stocked during season
		suitable	unsuitable	
*1930-31 .....	.....	.....	.....	.....
1931-32 .....	37	30	7	4
1932-33 .....	20	9	11	22
1933-34 .....	30	17	13	2
<b>TOTALS</b> .....	<u>87</u>	<u>56</u>	<u>31</u>	<u>28</u>

#### REVENUE OBTAINED FROM FISHING LICENSES, PERMITS, SALES AND SUNDRIES

Fiscal Year	Revenue
*1930-31 .....	\$ 4,849.29
1931-32 .....	18,861.22
1932-33 .....	14,739.60
1933-34 .....	15,071.61
<b>TOTAL</b> .....	<u>\$53,521.72</u>
Increase this year in comparison with last .....	332.01

\*Six months to March 31.

#### COAL

The total output of coal produced in the Province during the calendar year, 1933, showed a decrease of 155,246 tons from that of the preceding year. Production during 1933 totalled 4,714,784 tons with a valuation of \$12,197,339.20. In addition to this tonnage there were 2,730 tons produced by farmers for their own use, under permits, which figure is not included in the total output.

A considerable increase is shown in the tonnage of coke produced in the Crowsnest Pass area, the bulk of which was used at the Smelter at Trail, B.C.



*Disposition of Products.*—Coal sold for consumption in this Province reached a total of 1,123,357 tons for the calendar year, 1933. The balance of production was disposed of as follows:—coal shipped to other provinces in Canada, 1,662,971 tons; shipped for United States consumption, 18,449 tons; sold to railway companies, 1,500,061 tons; used for making briquettes, 14,935 tons; used for making coke, 75,275 tons; used under colliery boilers, 180,159 tons; used by colliery railroads, 5,994 tons; put to stock, 38,004 tons; put on the waste heap, 136,679 tons.

## COAL PRODUCTION

Calendar Year	Tonnage	Valuation
1930 .....	5,755,911	\$19,379,000.00
1931 .....	4,564,290	13,415,745.00
1932 .....	4,870,030	13,441,193.00
1933 .....	4,714,784	12,197,339.20
<b>TOTALS</b> .....	<b>19,905,015</b>	<b>\$58,433,277.20</b>
Decreases this year in comparison with last ...	155,246	\$ 1,243,853.80

*Disposition of Electrical Power.*—Purchased electrical power used by Alberta coal-mines during the year totalled 17,611,959 k.w. hrs.

## ELECTRICAL POWER USED FOR OPERATION OF ALBERTA COAL-MINES

Calendar Year	K.w. hrs.
1930 .....	25,003,606
1931 .....	16,918,625
1932 .....	14,875,890
1933 .....	17,611,959
<b>TOTAL</b> .....	<b>74,410,080</b>
Increase this year in comparison with last .....	2,736,069

*Mines Branch Annual Report.*—Statistical information covering Alberta's coal-mining activities for the calendar year, 1933, is given in complete detail in the published annual report of the Mines Branch for that period, which appears as a separate publication to this report.

## SHALE AND CLAY MINED

During the calendar year, 1933, 3,234 tons of clay and shale were mined from which 1,221,060 bricks were manufactured. One shale pit was in operation. Information covering this production is also included in the Annual Report of the Mines Branch for the calendar year, 1933, already referred to.

## SHALE MINED—BRICKS AND TILES MANUFACTURED

Calendar Year	Shale Mined (Tonnage)	Bricks Manufactured (Number)	Tiles Manufactured (Tonnage)
1930 .....	67,517	22,007,045	.....
1931 .....	23,855	7,091,080	2,825
1932 .....	8,446	3,444,010	182
1933 .....	3,234	1,221,060	.....
<b>TOTALS</b> .....	<b>103,052</b>	<b>33,763,195</b>	<b>3,007</b>
Decreases this year in comparison with last .....	5,212	2,222,950	182

## INSPECTION OF REVENUE

*Examination of Records.*—On October 1st, 1930, there were 251 active coal mines and 85 producing oil and gas wells operating in the Province. Of these, the books and records of the royalty bearing companies had not heretofore been examined by representatives of either the Dominion or the Alberta governments. With the appointment of an Inspector of Revenue, this work which involved a considerable amount of research was given the necessary attention. In addition to these duties, others, which demanded the investigation of both complaints and conflicting applications for leases of Crown lands, together with the supervision of collections, were duly carried out.

*School Lands Revenue.*—During the period of this report, three inspectors were loaned from the Department of Municipal Affairs for collection of school lands revenue in the Edmonton district. The undertaking, though more or less an experiment, proved a success, a total of \$37,785.82 being collected in three months, and a decision was arrived at to extend this work so as to cover all districts in the Province.

*Unreported Production.*—As a result of the research work carried out by this branch of the Department a very considerable amount of coal tonnage and petroleum and natural gas royalty was discovered unreported and action was taken for its collection.

#### BIRD SANCTUARIES AND PUBLIC SHOOTING GROUNDS

Co-operation offered by the general public in the observance of laws covering bird sanctuaries and public shooting grounds was evidenced during the year and a realization of the value of these special reservations was apparent.

A matter of concern has developed, however, in the continued dry seasons which have created a very real water shortage over large areas. A heavy growth of noxious weeds where water has receded presents at the moment a new and serious problem, which it will be necessary to control.

#### OPERATION OF BOATS ON LAKES AND RIVERS

The necessity for exercising some control over the operation of motor boats and other small craft on the waters of the Province resulted during the summer in the passing of an order in council which gave to the Fisheries Division the responsibility of this administration.

An exception to this regulation referred to boats of over five tons displacement which came under federal regulations and were therefore directly under the supervision of the Department of Marine at Ottawa.

Individual detailed reports from the various divisions of the Department follow.

Your obedient servant,

J. HARVIE,

*Deputy Minister.*

June 30th, 1934.

## OBITUARY

### ALBERT HELMER

It is with the deepest regret that the Department has to report the death of Albert Helmer, Supervisor of Grazing, which took place in California on Thursday, August 9th, 1934, during a visit to that State.

Mr. Helmer was born in Russell, Ontario, in 1858. In 1880 he came west with a survey party and a year later, with William Ogilvie, D.L.S., of Ottawa, became a member of the expedition which surveyed the fourth meridian, now the boundary line between Alberta and Saskatchewan. The following year the City of Tulsa, Oklahoma, received its original site from a survey party of which Mr. Helmer was a member. Returning to Russell he resided there for a number of years but eventually came west again. Between 1904 and the day of his death he served the Dominion Government and the Government of the Province of Alberta in an executive capacity as Ranching Inspector and Supervisor of Grazing.

Long years of efficient and loyal service represent his record. By 1881 he had helped to survey an empire. By 1934 he had helped to build it. From Maple Creek to the foothills of the Rockies, from the international boundary to the northern limit of the ranges he was known, respected and loved. Known for the experience which comes from a long life of untiring effort. Respected for the great understanding and insight of the problems of his work. Loved for his humanity. No memorial of brass or stone can equal the memory of his service, recorded in government archives and in the hearts of men.

His last official report as Supervisor of Grazing, published in the previous annual report of this Department, revealed the completeness of his knowledge. A masterly review on present day problems of the range. A stirring appeal for the protection of grass, that "most important of all crops." Death took place before the completion of his report for this year's publication.

Amongst the workers whose common goal is service he held a special place. His sudden and unexpected death came as a shock to the governments he had served and to all who had been privileged in knowing him.

The passing of Albert Helmer closes another chapter in the history of the West and leaves a gap which it will be hard to fill.

## Provincial Lands Administration

### REPORT OF THE EDMONTON LAND AGENT, J. W. STAFFORD

A perusal of the Annual Report of the Edmonton Agency for the fiscal year ending March 31st, 1934, which is herewith submitted, will reveal a considerable increase in the majority of transactions effected together with an increase in revenues received.

The monthly revenue statement, embodied in this report, discloses a noticeable increase, with the exception of July, September and October, as compared with similar periods during the preceding fiscal year.

Correspondence has been increasingly heavy and work in connection with applicants calling personally at this office appeared, if anything, to be a little heavier than in previous years.

In connection with the granting of homestead entries, a slight decrease is recorded, the total this year comprising 2,178, of which number 536 entries were granted to women.

The following business has been transacted in addition to the collection of ordinary revenue and the transaction of other business of a routine nature:

Homestead entries granted, 1st—1923, 2nd—255—total .....	2,178
Soldier entries granted .....	19
Applications for petroleum and natural gas rights .....	16
Applications for coal-mining leases .....	19
Domestic coal permits issued .....	2
Bar-digging permits issued .....	3
Certificates of work issued (quartz) .....	5
Placer mining claims granted .....	17
Quartz mining claims granted .....	6
Applications for school lands cultivation permits .....	353
Applications for provincial lands cultivation permits .....	10
Applications for grazing permits issued (school lands) .....	559
Applications for grazing permits issued (provincial lands) .....	106
Applications for grazing leases (provincial lands) .....	55
Timber permits issued .....	1,868
Permits to operate custom saw-mills .....	263
Hay permits issued (school lands) .....	260
Hay permits issued (provincial lands) .....	538
Number of applications for patent received .....	628
Number of applications for patent recommended .....	467
Number of applications for patent dealt with .....	2,266
Number of applications for patent checked for head office .....	1,509
Number of applications for cancellations received .....	1,019
Number of cancellation proceedings instituted by this office .....	186
Number of entries cancelled .....	1,251
Number of timber berths on provincial lands sold .....	66
Number of timber berths on school lands sold .....	11
Number of letters received .....	50,387
Number of letters dispatched .....	70,179
Number of stencils cut, 386, pages mimeographed .....	77,123
Number of translations for this and other departments .....	383

The following statement sets forth clearly the amount of revenue collected during each month with classification thereof:

Month	Lands	Timber and Grazing	Mining	School Lands	Tax Recovery	Total
1933—						
April .....	\$ 2,017.48	\$ 18,613.23	\$ 15,440.52	\$ 3,712.39	.....	\$ 39,783.62
May .....	3,337.94	14,640.65	15,604.85	4,263.81	\$ 51.73	37,898.98
June .....	4,178.96	13,320.12	7,314.64	3,018.91	.....	27,832.63
July .....	4,101.47	13,751.72	9,303.95	1,824.12	36.66	29,017.92
August .....	3,078.20	10,128.15	860.12	4,855.04	6.24	18,927.75
September .....	1,935.44	5,169.30	10,931.38	1,365.55	.....	19,401.67
October .....	3,382.75	10,728.21	13,916.32	2,144.20	.....	30,171.48
November .....	3,118.50	8,103.34	21,892.68	7,136.27	5.00	40,255.79
December .....	3,086.85	4,793.55	26,340.69	4,225.90	6.03	38,453.02
1934—						
January .....	2,564.77	8,116.32	11,347.22	6,923.80	.....	28,952.11
February .....	2,643.90	7,788.77	15,430.33	6,112.93	11.40	31,987.33
March .....	3,060.31	8,426.34	10,863.04	3,929.07	15.96	26,294.72
TOTALS .....	\$36,506.57	\$123,579.70	\$159,245.74	\$ 49,511.99	\$133.02	\$368,977.02

These revenues comprise payments on account of land sales, royalties and rentals on coal, petroleum and natural gas leases, rental on grazing leases, fees covering quartz and placer claims, homestead entry fees, payments for the issue of grazing and cultivation permits on school lands and business of a similar nature.

Logging and lumbering operations employed a much larger number of men than during the past fiscal year and though only a small increase was recorded in the manufacture of lumber, a very gratifying increase was shown in that of railway ties.

The following statement shows the products manufactured by the holders of timber berths under yearly licenses and permits:

	License Berths	Permit Berths	School Lands Berths
Lumber manufactured, feet, board measure .....	28,824,435	14,172,132	228,497
Railway ties .....	19,930	386,261	18,625
Piling, lineal feet .....		9,055	
Lath .....	1,922,050	583,356	
Mine timber, feet .....	6,710	12,862	
Logs, lineal feet .....	7,819		

Lumber manufactured on timber sales amounted to 926,795 feet, board measure, whilst logs cut totalled 4,100 lineal feet.

The total amount of lumber manufactured during this fiscal year is shown to be 47,595,539 feet, board measure, together with a total of 507,364 railway ties. A total of 1,568 miscellaneous permits was issued authorizing the cutting of timber on provincial lands and 300 permits on school lands. The quantity of timber authorized to be cut under these permits totalled 7,886,551 feet, board measure, as shown in the following statement:

	Provincial Lands Amount Authorized	School Lands Amount Authorized
Lumber, feet, board measure .....	7,729,720	156,831
Logs, lineal feet .....	230,701	6,566
Fence rails .....	1,211,091	250
Roof poles .....	230,770	
Fence posts .....	279,777	250
Cordwood, cords .....	2,916	373
Railway ties .....	164,279	6,650
Telephone and telegraph poles .....	1,050	
Piling, lineal feet .....		5,152
Shingles .....	160,000	16,000
Mining timber, lineal feet .....	203,169	

One hundred and thirty-seven seizures were made of timber cut from provincial lands and ten of timber cut from school lands, as follows:

TIMBER SEIZURES

	Provincial Lands	School Lands
Amount of timber covered thereby: Logs, lineal feet .....	37,959	
Lumber, feet, board measure .....	1,331,051	923,580
Mine timber, lineal feet .....	17,300	9,695
Fence posts .....	6,294	1,622
Ties .....	52,417	205
Piling, lineal feet .....	11,993	
Cordwood, cords .....	123	6
Rails .....	816	205

A total of 538 hay permits was issued on provincial lands authorizing the cutting of 5,086 tons, and under authority of which 3,189 tons were cut.

On school lands, 260 permits were issued authorizing a total cut of 1,756 tons in connection with which 1,144 tons were reported as having been cut.

Seven hay seizures covering a total of 79 tons were made on school lands and four covering 23 tons on provincial lands.

## REPORT OF THE CALGARY LAND AGENT, M. GOSSIP

The volume of business transacted in the Calgary Agency during the period of this report showed a distinct improvement over the previous year. This was especially noticeable during the last six months and revenue collected over the whole period revealed an increase.

The general routine work of the office still continued to be very heavy owing to the re-opening of homesteading in this district on May 2nd, 1933, and to an increase in petroleum and natural gas activities. It will be noted that over 4,000 petroleum and natural gas leases were cancelled during the year, and it is estimated that about 32,500 acres of such rights were put up for sale during the same period, of which 23 parcels were sold, aggregating 4,580 acres, the total amount of bonuses received being \$6,639.50.

It will also be noted that 532 homestead entries were accepted during the year as against 2 for the previous year. While this number is not excessive, it added considerably to the work of the office. In addition to this total, 92 entries were also taken for the Edmonton and Peace River areas, this office acting in the capacity of a sub-agency for those territories.

On receipt of instructions from head office, two visits were paid, during the fall of 1933, to the pre-emption area of this district for the purpose of assisting settlers who wished to convert their pre-emption entries into homesteads under an amendment to the Act passed during the session of 1932-33 and who, owing to financial or other reasons, were unable to come to Calgary to give personal attention to this matter as required under the regulations. It might be stated that the settlers affected were very appreciative of the efforts of the Department in assisting them in this manner, and in spite of almost impossible weather conditions and bad roads, 155 homestead entries were taken and revenue collected amounted to \$1,547.46 in addition to considerable other business being transacted.

The following is a statement of operations handled in the Agency during the year in addition to the collection of revenue and transaction of business of an ordinary routine nature, viz.:

Homestead entries granted .....	532
Soldier entries granted .....	1
Applications for grazing leases received and checked .....	101
Applications for petroleum and natural gas leases .....	80
Sales of petroleum and natural gas rights .....	25
Cancellation of petroleum and natural gas leases .....	4,440
Applications for coal leases .....	65
Domestic coal permits issued .....	45
Coal leases and permits cancelled .....	98
Quartz claims granted .....	1
Placer claims granted .....	13
Cultivation permits issued on school lands .....	386
Cultivation permits issued on provincial lands .....	36
Grazing permits issued on school lands .....	804
Grazing permits issued on provincial lands .....	190
Timber permits issued .....	222
Custom saw-mill permits issued .....	35
Number of applications for cancellation received .....	66
Number of cancellation proceedings instituted by this office .....	233
Entries cancelled .....	388
Applications for patent received .....	116
Number of letters received .....	44,934
Number of letters dispatched .....	47,829

The total revenue received during the year amounted to \$269,088.97, of which \$263,016.75 was applied as shown under the headings of the following statement, viz.:

Month	Lands	Timber and Grazing	Mining	School Lands	Tax Recovery	Total
1933—						
April .....	\$ 39.65	\$ 1,120.96	\$ 21,851.30	\$ 4,458.84	\$ 58.64	\$ 27,529.39
May .....	645.91	1,157.67	10,211.55	1,375.79	24.88	13,415.80
June .....	1,124.28	1,022.58	10,939.52	1,368.46	33.62	14,488.46
July .....	836.30	1,446.25	12,931.04	2,521.71	31.95	17,767.25
August .....	764.19	1,128.96	8,273.79	930.58	9.20	11,106.72
September .....	815.40	1,122.48	13,994.32	616.05	8.20	16,556.45
October .....	923.15	573.21	25,248.14	646.29	9.18	27,399.97
November .....	1,576.15	944.13	25,061.70	1,489.59	31.88	29,103.45
December .....	810.07	566.83	19,621.50	546.10	8.20	21,552.70
1934—						
January .....	450.39	1,229.89	18,478.82	1,024.33	37.40	21,220.83
February .....	489.36	1,426.81	19,619.86	2,406.33	65.73	24,008.09
March .....	549.13	1,476.30	26,103.15	10,615.92	123.14	38,867.64
TOTALS .....	\$9,023.98	\$ 13,216.07	\$212,334.69	\$ 27,999.99	\$442.02	\$263,016.75

The revenue received was chiefly made up of collections of petroleum and natural gas royalties which amounted to approximately \$72,528.00 as compared with \$71,749.00 collected the previous year. Coal royalties amounted to \$78,299.83 as against \$60,690.64 the previous year. Considerable revenue was also collected on account of petroleum and natural gas rentals and coal rentals. Collections on account of timber royalties still continued low.

It is estimated from returns received in the office that the approximate amount of naphtha and accrued oil sales from wells operated on provincial lands in this district amounted to 603,387 barrels, while 1,577,571 tons of coal were produced from mines operating under authority of government leases and sales subject to royalty.

There was no activity in placer or quartz mining during the year.

The timber activities in the district continued to be practically at a stand-still but the prospects for the future in this line of activity are beginning to look a little brighter. The following statements show the products manufactured by holders of timber berths under yearly licenses and permits, viz.:

	License Berths	Permit Berths
Lumber manufactured, feet, board measure .....	671,023	408,890
Lumber sold, feet, board measure .....	871,383	468,824
Railway ties .....	2,795	1,709
Mine timber, lineal feet .....	134,988	14,341
Saw logs, lineal feet .....	17,839	7,350

TIMBER OPERATIONS CONDUCTED UNDER AUTHORITY OF PERMITS ISSUED TO SETTLERS AND OF A MISCELLANEOUS NATURE

	Provincial Lands	School Lands
Permits issued .....	191	31
Lumber, feet, board measure .....	322,583	13,666
Building logs, lineal feet .....	17,868	96
Fence rails .....	13,042	1,610
Roof poles .....	2,550	.....
Fence posts .....	7,375	130
Cordwood, cords .....	1,361 (dry)	229
Railway ties .....	33,891	.....
Telephone and telegraph poles .....	.....	600
Mining timber, lineal feet .....	84,400	.....
Shingle bolts .....	5 cords	.....
Round lagging .....	14 cords	.....

TIMBER SEIZURES

	Provincial Lands	School Lands
Number .....	13	4
Amount of timber covered thereby:		
Lumber, feet, board measure .....	35,625	.....
Saw logs, lineal feet .....	11,132	2,800
(17 birch trees 6" to 10")	750 (sawn)	600 (hewn)
Railway ties .....	2,878	.....
Mine timber, lineal feet .....	.....	4
Cordwood, cords .....	.....	40
Roof poles .....	.....	.....

HAY PERMITS ISSUED

	Provincial Lands	School Lands
Number .....	83	50
Tons of hay cut .....	1,436	772

## REPORT OF THE LETHBRIDGE LAND AGENT, R. CRUICKSHANK

The business of this office for the year ending March 31st, 1934, as shown by the following information, indicates a larger volume of work than was done during the previous year. The general revenue total derived from business of this Agency as shown in the revenue statement of this report does not include the amounts which have been remitted direct to Head Office.

The following outlines the business transacted in addition to the collection of ordinary revenue and work of a routine nature:

Applications for grazing leases .....	242
Applications for petroleum and natural gas leases .....	80
Applications for coal-mining leases .....	4
Applications for limestone and quarrying leases .....	2
Applications for placer mining (renewal) .....	1
Applications for quartz mining .....	12
Applications for gravel permits .....	4
Domestic coal permits .....	83
Provincial lands grazing permits .....	240
School lands grazing permits .....	394
School lands cultivation and grazing permits .....	40
Provincial lands cultivation and grazing permits .....	157
Timber permits, provincial lands .....	18
Timber permits, school lands .....	7
Hay permits, provincial lands .....	14
Hay permits, school lands .....	2
Number of applications for patent received .....	112
Number of applications for cancellation received .....	8
Number of cancellation proceedings instituted by this office .....	60
Number of entries cancelled .....	337
Number of soldier entries granted .....	2
Number of first homestead entries granted .....	122
Number of second homestead entries granted .....	188
Number of homestead entries granted to women .....	87
Number of letters received .....	35,841
Number of letters dispatched .....	41,314
Grazing leases (covering 2,190,444 acres) .....	1,664
Coal-mining leases (covering 10,496.76 acres) .....	66
Coal-mining berths (covering 2,619 acres) .....	10
Miscellaneous leases .....	25

Homestead privileges were resumed in this district on May 1st, 1933, and settlers holding pre-emptions were allowed to abandon and re-acquire the land as homesteads, second homesteads or soldier grants providing that they were eligible to apply for entry. The majority of entries granted have been abandoned pre-emptions.

Most of the cancellation proceedings instituted were against pre-emptions and homesteads of over five years standing.

The total revenue received at this office during the year was \$119,603.67. This amount was applied under the following headings as shown by monthly distribution and indicates an increase of revenue over the previous year in the lands, mining and school lands branches. More interest has been evident in petroleum and natural gas which is responsible for the increase in mining lands revenue.

Month	Lands	Timber and Grazing	Mining Lands	School Lands	Tax Recovery	Total
1933—						
April .....	\$ 85.98	\$ 703.81	\$10,794.33	\$ 2,679.11	\$ 881.27	\$ 15,144.50
May .....	233.94	871.54	651.47	492.98	420.45	2,670.38
June .....	265.85	1,678.07	1,416.06	1,477.46	437.70	5,275.14
July .....	541.20	1,857.91	9,815.59	1,812.20	417.24	14,444.14
August .....	491.75	648.59	7,647.20	692.26	434.20	9,914.00
September .....	884.00	1,348.01	3,202.09	642.46	351.18	6,427.74
October .....	596.76	1,000.50	9,393.00	2 017.71	261.87	13,269.84
November .....	1,224.60	1,108.02	3,829.48	1,458.99	370.69	7,991.78
December .....	514.55	1,424.83	5,236.55	1,430.89	665.45	9,272.27
1934—						
January .....	1,334.36	890.36	5,293.16	795.88	276.87	8,590.63
February .....	729.57	2,122.87	5,620.39	2,318.74	741.16	11,532.73
March .....	611.27	1,181.47	6,277.89	5,255.84	1,744.05	15,070.52
TOTALS....	\$7,513.83	\$14,835.98	\$69,177.21	\$21,074.52	\$ 7,002.13	\$119,603.67



TIMBER AND HAY PERMITS

	Provincial Lands	School Lands
Timber permits issued .....	18	7
Cordwood, cords .....	61	16
Fence posts .....	150	450
Fence rails .....	375	.....
Roof poles .....	125	25
Hay permits issued .....	14	2
	(147 tons)	(32 tons)

TIMBER AND HAY SEIZURES

Timber seizures .....	1	.....
	(lumber, 8,232 ft., board measure)	.....
Hay seizures .....	1	.....
	(50 tons)	.....

REPORT OF THE PEACE RIVER LAND AGENT, J. J. E. CLARKE

The report of the Peace River Land Agency for the fiscal year ending March 31st, 1934, shows a decrease in revenue collected amounting to \$11,167.05 as against the total collections of the combined Peace River and Grande Prairie offices during the previous year, which is without doubt a result of present economic conditions in this area. This reduction may be distributed approximately as follows:

Lands .....	\$8,000.00
Timber and grazing .....	1,800.00
School lands .....	1,500.00

The collection of payments on land sales, rentals and improvements has been very slow and difficult, requiring numerous letters at close intervals. In a great number of cases payments for improvements have been made on the basis of small instalments which in some instances have been as low as \$1.00.

The following statement shows the business in force during the period of this report:

Homestead entries granted .....	656
Soldier entries granted .....	4
Improvement payments .....	206
Land sale payments .....	20
Applications for cancellation fees .....	331
Authorities to refile .....	287
Searches and maps .....	174
Applications for patent received .....	1,149
Number of applications for cancellation received .....	345
Number of cancellation proceedings instituted by this office .....	163
Entries cancelled .....	645
Custom saw-mill permits issued .....	56
Grazing permits issued .....	136
Timber permits issued .....	1,123
Hay permits issued .....	329
Grazing rentals collected .....	133
Timber excess payments .....	91
Mining fees .....	9
Mining rentals .....	16
Mining royalty payments .....	52
Cultivation permits .....	37
Letters received .....	25,853
Letters dispatched .....	26,223
Inspections called for .....	782

In addition to the above, transactions of a miscellaneous nature such as timber and hay seizures, hay excess and sundry payments were given the necessary attention.

The following is a statement showing the different classes of revenue received during the period covered by this report:

Month	Lands	Timber and Grazing	Mining	School Lands	Fur Farm	Totals
1933—						
April .....	\$ 574.70	\$ 1,049.64	\$ 44.30	\$ 435.70	.....	\$ 2,104.34
May .....	674.45	787.58	17.70	572.06	.....	2,051.79
June .....	1,108.15	666.84	135.00	195.30	.....	2,105.29
July .....	1,503.10	736.73	132.60	88.54	.....	2,460.97
August .....	1,513.00	516.56	.....	492.95	.....	2,522.51
September .....	717.21	228.10	.....	12.45	.....	957.76
October .....	877.25	214.30	61.60	23.28	.....	1,176.43
November .....	1,560.60	227.07	60.60	19.24	.....	1,867.51
December .....	725.22	201.84	20.45	206.17	.....	1,153.68
1934—						
January .....	784.00	614.26	222.42	484.03	.....	2,104.71
February .....	674.25	479.49	61.80	130.43	.....	1,345.97
March .....	964.06	1,109.93	48.70	446.00	.....	2,568.69
TOTALS .....	\$11,675.99	\$ 6,832.34	\$ 805.17	\$ 3,106.15	.....	\$22,419.65

This revenue does not include a number of payments on school lands sales and grazing rentals which were made direct to head office during this period. The general total in the above statement is made up of homestead entry fees, payments for improvements, etc., as shown in the schedule of business.

There was a splendid crop all through this country last season, but owing to an early snowfall much of the crop on the north side of the river is still in stook with consequent delay in threshing. Rabbits were extremely plentiful during the past winter and have caused great damage to the crops in stook, for which reason the yield will be disappointing. What with this calamity and the low prices received for grain the farmers and business men have been placed in an unenviable position financially, which has reduced their ability to meet obligations and no doubt has had an undesirable effect on the collections of this office.

Very little difference is shown between the number of hay and timber permits issued this year as compared with last. A small increase appears in timber with the reverse in hay.

The demand for local coal in Grande Prairie and adjacent towns continues to increase. Returns show 2,893 tons mined during the year. Two coal leases were recently granted on lands within a short distance of Peace River and development is expected to take place next winter. It is hoped that coal equal to that along the Wapiti will be located which would mean a considerable saving to the residents of this town, who at the present time are obliged to pay \$8.50 per ton for inferior coal shipped in from outside points.

An increase of 42% appears in the total number of applications for patent received as compared with the combined total of the Peace River and Grande Prairie districts for the previous year. The total recommended for final consideration by the Department was 877. All applications required considerable care and attention and in a great number of cases several letters were necessary before they were in a condition for recommendation.

One permanent sub-agent at Grande Prairie, three timber inspectors and one inspector of the Fisheries Division are authorized to transact business for this office on certain days during each month at different points, in addition to which the offices at Lethbridge, Calgary, Edmonton and head office have also accepted business for this district. By this arrangement counter work has been considerably reduced which has proved most advantageous as otherwise it would have been a very difficult matter to carry on operations with the present small staff if all the business had been received over the counter.

	Provincial Lands	School Lands
Timber permits issued .....	1,117	6
Lumber, feet board measure .....	7,117,646	5,500
Logs, lineal feet .....	204,394	760
Fence rails .....	1,566,178	.....
Roof poles .....	309,958	.....
Fence posts .....	335,540	.....
Cordwood, cords .....	6,350	36
Shingles .....	33,000	.....
Shingle bolts (cords) .....	64	6
Piling, lineal feet .....	14,761	.....
Railway ties .....	4,525	.....

## TIMBER SEIZURES

	Provincial Lands	School Lands
Number .....	26	1
Amount of timber covered thereby:		
Lumber, feet board measure .....	29,850	.....
Logs, lineal feet, board measure .....	4,800	2,200
Poles .....	83	.....
Ties .....	9,368	.....
Cordwood, cords .....	8	.....

## HAY PERMITS

	Provincial Lands	School Lands
Number .....	265	64
Number of tons of hay .....	2,348½	551

## HAY SEIZURES

	Provincial Lands	School Lands
Number .....	2	.....
Number of tons of hay .....	11	.....

## Technical Division

### REPORT OF THE TECHNICAL DIVISION, T. W. DALKIN

Since the issue of last year's report satisfactory progress has been made in transferring information from Ottawa to the new plan records set up by the Technical Division.

Those dealing with minerals have now been completed in as far as they show petroleum and natural gas leases, coal leases, patented mineral sales, coal land sales and mining lands sales. A beginning has now been made to check the fiats for patent with a view to plotting all underrights which have been alienated in the past. Until the fiats for every patented parcel of land in the Province have been searched, this particular phase of the work will not be complete. Certain mineral rights have been transferred to this Department with the tax recovery lands and the information thus secured will also be incorporated in these records. At the present time only one draughtsman is engaged upon this work and when it is realized that he is also responsible for the plans and descriptions of the current leases it will be understood that some considerable time must elapse before the mining records can be regarded as complete.

An examination of the old Dominion files and plan records was undertaken and a new set has been arranged which shows by township plan all licensed and permit timber berths. Work has been started on a set of forestry records which will show by plan of each township the boundaries of the reserves and the changes from time to time, the surface leases and all forest service improvements such as forest reserve headquarters, ranger cabins, look-outs, telephone lines, trails, etc.

The grazing records are now complete and show all grazing leases within the province plotted on township diagrams. With the completion of these a duplicate set of the plan records was forwarded to the office of the Supervisor of Grazing at Calgary together with a numerical index to the ranches. Arrangements have now been made with the Department of Municipal Affairs for grazing leases to issue through this Department covering the Tilley East and Berry Creek areas.

A great deal of work has been done in clarifying the records of the stock watering reserves transferred to this Division from Ottawa and during the past year certain orders in council have been passed releasing 6,790.79 acres, more or less, for other purposes, as it was found that such areas were no longer needed in this connection.

A set of records is now being made showing an index to the surveyed roadways affecting Crown lands. During the year a total of 105 plans of surveys of new road diversions affecting 433 parcels of land were recorded in this Division. Quit claims and compensation were obtained where the roadways affected lands under sales contracts and in cases of homestead entries, quit claims and compensation were exacted where the areas of the new roadways exceeded two and one-half per cent of the Dominion entries or four per cent of the area of homesteads filed upon under the provincial regulations. Numerous roadways were cancelled and each area in question added to the existing sale, entry or lease, as the case might be, care, however, being exercised to protect the government telephone leads where they were found to exist upon such cancelled roadways.

It has been discovered that there are a great number of transmission lines located upon government lands, permission for which had never been obtained from the Dominion Government. A complete check is now being made in this regard resulting in considerable correspondence which has been entered into with the various power and utility companies with a view to establishing legal rights by means of licenses of occupation over Crown lands. Similarly, correspondence has been started with corporations and individuals regarding large tracts of lake areas which have been used for a considerable length of time without government permission.

Below are appended the number of notifications issued and details of acreages patented for the fiscal year ending March 31st, 1934:

Nature of Grant	Number of Notifications	Area, Acres
Homesteads .....	841	131,955.013
Sales .....	43	2,963.71
Second homesteads .....	104	16,202.71
Soldier entries .....	46	7,257.82
Purchased homesteads .....	1	111.10
Pre-emption sales .....	3	480.00
Special grants .....	24	1,827.93
Exchange of land grants .....	5	826.12
School lands sales .....	34	3,595.05
Northern Alberta Railways .....	3	2.37
Canadian National Railways .....	1	2.12
Lacombe and North Western Railway .....	1	0.61
<b>TOTAL</b> .....	<b>1,106</b>	<b>165,224.553</b>

In examining the special grants it was interesting to note that there was a conveyance to the Dominion of Canada of an area representing 1,288 acres, more or less, which area is now included within the limits of Buffalo National Park. Negotiations were carried on with the Dominion Government for some time with the result that there was also a special grant put through for the Dominion covering an area of 206.29 acres, more or less. This area of land is located at the new eastern gateway of the Banff National Park. Representations were made that there was an area of land on the banks of the Brule River in township 77, range 5, west of the 6th meridian, which would be desirable for a park site and accordingly 6.49 acres, more or less, were patented in favour of His Majesty the King, in the right of the Province, as represented by the Minister of Public Works, subject, however, to an habendum clause restricting the use of the land to park purposes. Reservations were entered in the records against certain other lands for park purposes in township 83, range 19, west of the 5th meridian, and in township 72, range 9, west of the 6th meridian, which latter area is known as Saskatoon Mountain Park.

In reviewing the notifications covered by sales it is seen that an area of 2,562.13 acres, more or less, was patented to the different drainage and irrigation districts. Certain exchanges of lands were effected in the Tilley East area and notifications were accordingly issued covering 826.12 acres, more or less.

In addition to the areas set out in the foregoing schedule, fiats were issued in order to release a total of 365.89 acres, more or less, from the operations of an habendum clause restricting the use of the land to religious purposes.

In accordance with the agreement covering the transfer of the natural resources, certain lands were held by the Soldier Settlement Board, and according to information received from time to time 34 patents were issued direct by the Dominion Government covering an area of 5,178.34 acres, more or less. On the other hand, several tracts of land held by the Director of Soldier Settlement as agent of the Crown in the right of the Dominion were transferred to the Province after the lands had been offered for sale by public tender and other efforts to resell had been made without result. These lands

which comprise an area of 8,678.32 acres, more or less, are free and clear of all encumbrances and discharged of all rights and claims. They are located in un-organized territory.

Lands continue to be transferred to the jurisdiction of this Department from the Department of Municipal Affairs, and an area comprising 8,750.54 acres, more or less, was made available through tax recovery proceedings for administration by this Department. A small number of lots in certain subdivisions were also transferred. In addition, lands aggregating an area of 28,627.87 acres, more or less, previously held by the Canada Land and Irrigation Company were also transferred to this Department.

Several applications in the vicinity of the junction of Ghost River and Waiparous Creek in township 27, range 6, west of the 5th meridian were received in the Department with the result that it was deemed advisable to have a subdivision at this point. Accordingly a request was made to the Director of Surveys to submit a preliminary plan showing the manner in which this area could be laid out for summer residences. A tentative plan was received and approved and instructions were given to proceed with the final plan of survey. A similar request was made in connection with another summer place known as "Crimson Lake Resort" located in township 40, range 8, west of the 5th meridian.

Other requests included surveys for some bible camp sites in the north-east quarter of section 6, township 47, range 1, west of the 5th meridian, on the shores of Pigeon Lake, and also the tying of certain Hudson's Bay posts into the present system of survey. These posts considerably antedated the township plans and were overlooked when they were made. Other surveys were requested of a more or less varied nature including one of the Pembina River in township 66, range 2, west of the 5th meridian, licensed timber berth No. 6123 in township 49, range 19, west of the 5th meridian and a certain area to be included in the Cooking Lake seaplane base.

This Division has now a complete stock of township plans and during the year a total of 37,200 was received from the Department of the Interior for the records. In addition to these a stock of maps of various descriptions was received including a supply of sectional sheet maps. A very comprehensive supply of maps is now carried and there is a steadily increasing demand for their purchase by personal application from the public generally. Correspondence is also received from far away points making application for maps suitable for those interested in homesteading, prospecting, mining and hunting.

An additional 2,000 copies of the Edmonton Agency map were received making a total to date since the transfer of the resources of 4,000 copies. There appears to be a great demand for this map, chiefly for homesteading purposes. The supply of the Calgary and Lethbridge Agency map was exhausted and accordingly a revised and up-to-date one was prepared and an order placed for 3,000 copies to be made.

Correspondence carried on with the various departments in Ottawa still continues to be heavy. Considerable progress, however, has been made in connection with the unpatented railway rights of way required through school lands by the Northern Alberta Railways Company which were included in the sale of the provincially owned railways. Sufficient information has now been obtained so that the issuance of the notifications can be proceeded with immediately. Correspondence has also been completed with the Surveyor General and arrangements have been made to secure copies of the balance of the railway plans required to complete the records.

A most useful and comprehensive set of soil survey records has been prepared. In these records are included all the reports of the surveys and maps which

have been made both by the Dominion Government and the University of Alberta. A large map of the Province showing by colour the different classifications of the soils provides a key. On the completion of new surveys the map is altered so as to incorporate them in the present system. Homesteaders and the public generally are availing themselves of this service so that a complete knowledge of the land is obtained from this office, thus avoiding, in many cases, the necessity of an actual inspection upon the ground.

There is a general increasing demand for the drafting of maps, plans and sketches and also for mathematical computations of areas from the land agencies and from the various divisions of the Department.

## Petroleum and Natural Gas

### REPORT OF THE DIRECTOR OF PETROLEUM AND NATURAL GAS, W. CALDER

With the completion of another difficult year for all world industry and commerce, it cannot be expected that any noticeable improvement should have taken place in oil and gas development in Alberta during 1933. A slight return of confidence, however, appeared early in the summer but as this was principally limited to section 28, township 18, range 2, west of the fifth meridian (south end of Turner Valley), the work undertaken cannot be classed as new development and must be termed extension work of a proven area. Outside of the Turner Valley, preliminary construction has been started at two locations in the foothills. At both of these the surface geological and topographical indications are sufficiently promising to warrant the forecast that, subject to no adverse geological conditions at depth, these tests should open up new oil producing areas which will considerably extend both north and south the productive belt in the foothills.

In other parts of the Province development and prospecting still mark time but with a return of confidence in the foothills belt such confidence it is anticipated will also eventually extend to other districts where oil has been proven.

In the Duvernay area a test was commenced in late autumn, but work had to be suspended during the winter on account of severe weather. Drilling has again been resumed and it is anticipated that definite results will soon be available. The locality of this test being close to the Duvernay well, drilled during 1930, should confirm the promising thickness of oil bearing formation proven in the latter. Unfortunately, as in the drilling of the Duvernay well, the rotary system of drilling has been adopted and it is feared that the hydrostatic pressure of the drilling fluid will force the oil back into the formation and unless a prolonged production test is made the results may be insignificant and misleading.

It is necessary to record that the foregoing three areas of new prospecting are nearly all controlled by leases issued under provincial regulations.

After a long period of drilling, the Ranchmen's Gas and Oil Company's No. 1 well at Aldersyde would appear to be nearing productive formation, the depth at March 31st being 6,260 feet where encouraging indications of gas were encountered. The management of the Company has to be congratulated for its courage and persistence in continuing this drilling against great odds, the principal of these being lack of finances and uncalled for adverse criticism.

The latter would appear to be solely due to an absence of favourable geological outcrops in the intervening area extending west from the well to the foothills, the critics apparently having failed to appreciate that the great pressure which caused the vast underground overthrust of formation at the Turner Valley must also have had certain effects on the underground formations to the east of that area where considerable minor folding may be discovered when the district to the east is prospected by deep drilling. The location of such hidden folds will be an impossible problem from surface outcrops and failing success with some form of scientific apparatus there remains only one sure method to give true information on underground conditions—that is by chance drilling similar to the manner in which the Ranchmen's well was located. Prospecting in this way is however highly speculative and few if any advisers will risk reputations for such wildcatting ventures.

Exploration of the Aldersyde-Turner Valley area can only, therefore, be expected to be done by persons prepared to venture and by doing so they may be fortunate enough to make welcome discoveries which will give a definite lead and prove a real incentive to those who have faltered.

For several years the potentialities of the Aldersyde area have been favourably considered by the divisional staff who, while appreciating the depth to which wells would have to be drilled, were sanguine that favourable oil and gas indications would be encountered. Confirming their views, a memorandum and sectional plan prepared by Mr. Owen during 1932 but not made public until now have been attached to this report in Exhibits D and E.

Although the demand for gas in the Province has maintained approximately the same consumption total as in previous years, there has been no new development to discover reserves of gas. It is, therefore, presumed that the operators of gas wells are satisfied that the latter are in good condition—also that there are ample reserves for all requirements that may arise.

Owing to a depleted staff and limitations of expenditure, the usual annual inspections of gas wells by the divisional staff had to be omitted during 1933 and the only information available respecting the condition of wells is that submitted by operators. As the latter are liable to omit essential details re defective wells, an endeavour will have to be made to continue the annual inspections by the Division. Such inspections may interfere with routine work but all efforts will be made to minimize delays that may occur.

The gross annual production during 1933-1934 of all classes of oil amounted to 1,141,473 barrels of thirty-five imperial gallons, an increase of over 24% as compared with the quantity recovered during 1932-1933. The increase is mainly due to the completion of four new wells in the Turner Valley, also a greater recovery of naphtha since the absorption plant in that area has been in operation. Without these conditions it is estimated that the total oil production would only have been 656,281 barrels or a decline of 39% on the 1932-33 total.

The foregoing amply confirms the necessity of continuous exploration and development to maintain oil production and it is hoped that sufficient incentive will materialize to encourage operators to put forward every effort to develop new areas.

During the first part of the year, production dropped rapidly and it was only on completion of the absorption plant that an improvement occurred. Results at this plant, erected by the Royalite Company and designed for a daily through-put of seventy-five to eighty million cubic feet of gas, have proved so satisfactory and remunerative, that extensions have already been added and it is rumoured that a second plant of a similar capacity is projected for erection at the south end of the Turner Valley.

The processing of the gas is done entirely without mechanical aid, the only mechanical appliances used in the operation being sundry pumps which are required in the rectifying plant for pumping the recovered naphtha and the regenerated absorption oil into tanks. It is, therefore, assumed that the designers have relied on the well pressure remaining sufficiently high enough for some time to come to propel the gas through the absorption towers, fractionating plant and scrubbers and thence to points of consumption. However, should mechanical boosting be required at a later date, there is ample space adjoining the new erection to permit the installation of any auxiliary plant required. Photographs of the plant were included in the annual report for 1932-1933.

The main features of the present plant are as follows:—

- (1) Four standard separators to remove all possible naphtha before the gas enters the absorption towers;



- (2) Three absorption towers five feet by fifty feet high;
- (3) Four separators to remove any absorption oil that may pass through with the stripped gas from the absorption towers;
- (4) Rectifying plant for removing naphtha from the absorption oil and regenerating the latter for re-use.

Although the recovery of naphtha by means of absorption is a slight advance in efficiency there still is dissipated to the air by independents an enormous quantity of recoverable naphtha with the accompanying gas. To this has also to be added wastage of the stripped gas from the absorption plant in excess of pipe line requirements. Apparently no constructive thought has been given to further efficient development, such as improvement in the actual operation of wells and methods to conserve waste gas. Regarding the former, competently supervised effort should have been made to learn if the use of tubing would be beneficial as there appears ample evidence to confirm the theory that the naphtha at the bottom of wells is in a liquid state but not in sufficient head to rise to the surface in the large areas of the producing casings. It is anticipated that properly tubed, the wells, although possibly failing to flow liquid naphtha would at least give a more highly saturated gas with a consequent greatly reduced gas/oil ratio for each barrel of naphtha recovered. With regard to utilization of the waste gas, it is reasonable to assume that the porous zones in the limestone are now sufficiently open to permit the free intake of injected gas, in which case the latter would not only accelerate the movement of naphtha to the bottom of producing wells but would also ensure storage of the gas for future requirements. It is admitted that a plant capable of repressuring one hundred million cubic feet of gas per day would necessitate an expenditure in the neighbourhood of \$5,000,000.00 but the results which would accrue from this investment, although deferred, would present a considerable profit not only from an increased recovery of naphtha but also in the conservation of gas for future needs.

The authority of the Turner Valley Gas Conservation Board having ceased during the month of February, 1933, supervision of well productions reverted to the Division on the basis that permitted withdrawals of gas should not exceed a total of 240 million cubic feet per day and that the operating regulations be altered to allow of withdrawals being raised from 25% to 40% of the estimated open flow volume. Due to no full open flow volume tests having been made officially at any well, it was found necessary to adopt an empirical method for arriving at the open flow volume. This was obtained by taking the volume for each well at two-thirds of the closed in pressure shown in the Turner Valley Gas Conservation Board's report, and correcting this figure to a gross and on the latter allotting forty per cent. Due to even this allocation preventing a few wells being operated, certain slight concessions were made. By the method outlined above the permitted withdrawals amounted to 239,345,000 cubic feet. Later in the year further allowables had to be added from time to time as new wells were completed. Due to these conditions the total authorized withdrawals at the end of the year amounted to 283,401,000 cubic feet per day, against which the average daily withdrawals during the twelve months counting from April, when the first orders were communicated to the operators, amounted to 275,524,000 cubic feet per day.

Although a very welcome reduction has been made in the daily waste of gas, there is still ample evidence that further curtailment is imperative and the logical procedure would be to revert to the 25% allowable withdrawal as originally set out in the provincial regulations. Any official suggestion, however, to reduce the percentage would at once renew the hostility of the small independents and also all those now engaged in new drilling work on section 28,

township 18, range 2, west of the fifth meridian and adjoining areas. In as much as the present wastage of gas entails a considerable loss in naphtha to the independents, it is strange that a collective agreement is not arrived at whereby all operators would agree to tube their wells and voluntarily demand a reduction of the allowable gas withdrawals to 25 per cent. In the event of operators failing to make such arrangements the only alternative available would be the full enforcement of Section 28 of the Drilling and Production Regulations so that all wells would be tubed to reduce the gas/oil ratio.

As the majority of Turner Valley gas operators were exceeding their gas quota withdrawals, the requirements of Section 33 of the above mentioned regulations relating to meters were also communicated to all well operators in the Province and to date the majority has fully complied with this order. The exceptions in the Turner Valley were at two wells both of which were closed in and sealed by representatives of the Division. The only other exceptions in the Province where wells are not metered are those operated by the city and manufacturers at Medicine Hat and Redcliff where, owing to a complete shut-down in most industries, a special delay has been granted until such time as work at the factories is resumed.

The operators of the Widney and Sioux City wells verbally asked for authority to open the casings in their wells opposite known crude horizons. These requests were made as the naphtha production from the limestone had declined and was non-remunerative. The applicants expressed the desire to be allowed to leave the limestone formation open so that the gas would be available for elevating the crude oil. These requests, however, were not authorized as the sulphur content in the limestone gas would not only contaminate and reduce the value of any crude oil obtained but would also, being under greater pressure than that anticipated in the crude oil horizons, tend to force back the oil into the formation and prevent full recovery. As a result of this decision both companies had to agree to the specification outlined by the Division and completely cement off the limestone formation. The Widney Oils met with considerable success and for some time have attained a daily output exceeding fifty barrels of high grade oil.

With regard to the Sioux City, this company did not make a prolonged test at any of the horizons noted during the drilling of the well and were forced therefore to salvage the casing and abandon the location.

The management of the Okalta Oils also made a similar request as above and on learning that the limestone formation had to be completely cemented off relinquished its application.

At the Dome No. 2 well, production having declined to a negligible quantity while considerable gas was being blown unnecessarily into the atmosphere, the company was communicated with respecting its intentions. No satisfactory answer being received to repeated communications, instructions were issued to the divisional engineer to close and seal the well, due notice having been sent to the company that this was being done. Shortly after the well was sealed the company's management intimated its desire to plug the well back as had been done by the Widney and Sioux City wells.

It is a regrettable fact that operators of crude oil wells in the Turner Valley apparently fail to appreciate that the oil contains a considerable quantity of wax, also that the oil carrying formation is a very compact sandstone, conditions which both preclude a long productive period in any oil well unless it is continuously cleaned out to remove the wax accumulation and persistent efforts made to break up the oil sand to permit a free flow of oil. Unfortunately, trained assistance, experienced in combating similar production difficulties, has never been available, with the result that crude oil wells operated to date have rapidly declined

in output and in all cases have been abandoned without any attempts being made to overcome the waxing or other impediments which prevent the oil inflow.

A continuation of the Turner Valley well testing, which was initiated in 1931 and carried on by the Turner Valley Gas Conservation Board in 1932, was all that was possible in this particular branch of the work by the divisional staff during the year. Tests under the Board's supervision having been made over a period ending in November, 1932, similar ones were accordingly made during the following September to coincide as nearly as possible with those previously carried out. As all wells could not be tested simultaneously the Valley was sub-divided into areas so as to permit of the work being carried out expeditiously. All operators having been warned beforehand of the exact date when their wells would be tested, no delays occurred and the work proceeded satisfactorily. It is necessary to record that this was made possible by the welcome co-operation and assistance of the operators and their field staffs. The friendly attitude met with now amply confirms the view previously held that the benefits of accurate data and efficient control, when known, would be fully appreciated by all concerned.

The tests showed that there had been a marked decline in pressure over all the older producing wells and that if excessive withdrawals of gas were continued the pressure at these wells would within a measurable time be reduced to 400 pounds, the estimated useful pressure required to transmit the gas to points of consumption without mechanical means. Taking the field as one area, the decline in pressure between November, 1932 and September, 1933 was 130 pounds, the November pressure being 1,010 pounds and that for September 880 pounds. A very close control having been made of the gas withdrawals during the period, it was found that for each 100 pound drop there had been a gas withdrawal of 54,900 million cubic feet and that the average decline for the field amounted to .45 pounds per day, which may be regarded as advance evidence that the efforts to attain efficiency are having beneficial results.

It is difficult to forecast the control necessary for low pressure wells as these are all owned by operators who lack financial reserves for purchasing the required mechanical equipment when the wells reach the lowest useful well pressure of 400 pounds. It is possible owing to the naphtha content being greater than in more recently drilled wells that those showing a low pressure will eventually be taken over by the Royalite Company which would be able to install the necessary equipment for raising the liquid product. Rumours have been current that negotiations for such well transfer were in progress but so far the only official information that agreements have been completed refer to the Alberta Pacific Consolidated, New McDougall-Segur and the Commonwealth.

During the year further small refining units have been erected contiguous to oil producing wells. In all cases these erections are limited in capacity, are very crude and inefficient in construction and for this latter reason present a continuous fire hazard to life and property. It is, therefore, suggested that refinery and similar processing constructions be prohibited on known oil productive land and that the locations be at not less than one mile from any productive well.

Ever since the inception of local sales of naphtha at the Turner Valley great danger to travellers generally has been created, not only on highways leading from the Valley, but on routes far distant from the point of production. Repeatedly, serious accidents have occurred resulting in complete destruction by fire of the vehicle and contents, but so far apparently there has been no loss of life. When these local sales were first initiated the purchasers were farmers who bought only in loads of a few barrels of naphtha for their own needs. These farmer purchasers have now been wholly superseded by dealers and transport contractors who convey their loads to remote parts of the Province

and even to Saskatchewan and British Columbia, thereby intensifying the hazard of road travel over a very extended area. Latterly a very dangerous form of tank vehicle has been adopted, which, being very wide, is therefore a constant menace to the travelling public, particularly at narrow bridges. The persistence of the drivers in seldom deviating from their course for oncoming traffic constitutes an additional risk. Possibly this apparent selfishness is due to the heavy loads carried and the fear of drivers that the vehicles will slide off the road. The danger is continuous and ever increasing and demands a regulation which will protect the safety of the public not only in the oil field area but all over the Province.

The foregoing may appear a digression and it is therefore necessary to state that although the reasons for local sales were originally commendable and beneficial to individuals, the practice has now reached formidable dimensions and created intensified road hazards. It is suggested that as naphtha must be classed as a dangerous product when being conveyed on public roads, such road haulage should only be permitted under special license permit, the dimensions and weight of tanks to be limited to a safe travelling capacity and vehicles required to always present daylight distinguishing danger marks and lamps at night-time. Finally that the sale of the product at the well should only be permitted through acceptable and controlled metering apparatus.

The further deepening and completion of Miracle No. 2 well, Turner Valley, having been carried out during the year, it is necessary to record that during the first three months of production a considerable quantity of water was expelled with the wet gas. At first the oil recovered was of a gravity in the crude oil series but as the quantity of water decreased the product changed to naphtha thereby tending to prove that naphtha bearing zones in the limestone had been inundated by the rotary drilling water. This evidence is of great importance and may account for the negative results obtained in other rotary drilled wells when these passed through known oil bearing horizons, and justifies the recommendation that the use of rotary equipment for drilling through known oil bearing formation be prohibited or that such formation be thoroughly checked by prolonged bailing tests.

In connection with and further confirming the foregoing danger, there has to be cited the rotary drilled test at Two Hills where despite several oil carrying sands extending from 1,599 to 1,986 feet and approximating a total of considerably over fifty feet, no oil was obtained after a short test and the location was abandoned.

In the annual well test reports, submitted by the city of Medicine Hat, further evidence was obtained to prove that gas pressure at most wells in that area showed an appreciable increase, amounting to 67 pounds since 1930. From 1920 to 1930 the area decline in pressure ranged from 3 to as high as 26 pounds per annum. This decline and other very evident dangers were brought to the notice of city officials during 1927 and 1928 but it was only during 1929-1930 that any action was taken to carry out the suggested protection measures made by members of the present Petroleum and Natural Gas Division's staff.

Since the inception of provincial control, these efforts for safety and efficiency at Medicine Hat have been continued with the result that the majority of defective wells has been repaired, new wells drilled on locations selected by the divisional staff and the city pipe line distributing system overhauled. The increase in area pressure and other well conditions at Medicine Hat conclusively proves that the efforts of the Division to obtain true conservation by efficient engineering has benefited this district and prolonged the gas producing life of the field considerably.

From past inspections of the Viking gas field and from the Northwestern Utilities Company's annual report for 1933 it is very evident that water intrusion through defective casings may also be curtailing the useful life of the wells in this field and similar methods of protection as those recommended for Medicine Hat may have to be enforced after the forthcoming annual inspection tests.

On account of the operator and leaseholder (Western Consolidated Oils Limited) of the area on which Onalto Oils, Limited, No. 1 well was drilled, having ignored repeated requests for the payment of rentals and royalties, it was found necessary to take possession of the well and equipment. The well was accordingly taken over by the Division during 1933 since when the leaseholder has been given every opportunity to obtain possession subject to the indebtedness to the Department of Lands and Mines being fully liquidated. Up to the end of March those interested had failed to make full payment. In the meantime the well is being operated under divisional supervision. The oil obtained is limited in quantity—15 barrels per day—but is water free and of a gravity superior to that hitherto obtained in the Wainwright area.

The attitude of the Onalto principals is typical of the indifference shown by the majority of leaseholders and operators, not only at Wainwright but in other parts of the Province, to developing the resources. With regard to oil development, the chief causes which appear to delay progress, particularly at Wainwright, would seem in the past to be lack of adequate refining facilities. This deficiency, however, no longer applies as a refinery of 300 to 400 barrels capacity has just been completed and owners of wells with oil have an outlet available for their product. Other reasons for non-development are the blanketing of considerable areas of land by speculators without capital who have prevented bona fide operators developing the land except at exorbitant royalty rates and in some cases cash premiums. Finally there is the regrettable condemnatory attitude of investigators who, failing to find satisfactory outcrops of formation or oil seepages, give no thought to the high elevation above sea level of most of the Province, ignoring the fact that all formations are masked by glacial drift underlain by impervious beds of low dipping shales together with the common present day delusion that no oil area can have potentialities unless the initial well outputs are spectacular. The widespread evidences of oil in Alberta require no dilating. With regard to the possibilities of small outputs per well there is ample proof that these can be profitably developed but to realize success it is necessary that the work be supervised by competent and unselfish personnel.

Phenomenal well productions favour the incompetent as mistakes or accidents arising through inexperience can always be blamed to extraordinary conditions but where it is a question of obtaining revenue from small producing wells, it is only those with experience in such work, who can hope to be successful.

The future of oil development in this Province is vital to the welfare and progress of Alberta and the adjoining prairie provinces and any failure of those interested in leases, etc., to develop this proven natural resource will be indicative that selfishness and greed still predominate despite the lessons which have been so convincingly taught by the depression demonstrating the cause of present world chaos.

During the annual tests of the Viking gas wells by the operator, it was only possible for those to be partly witnessed by the divisional representative who had to be recalled before they were completed, the tests being unduly and unnecessarily prolonged owing to the Hudson's Bay Oil and Gas Company having requested an extensive blowing of all wells, presumably in an endeavour to obtain an improved gas/ratio for their two wells located on alienated land.

Extensive blowing of any gas well is contrary to the practice of the Division, the reasons being that this not only entails considerable waste but is liable to intensify water migration from wet wells to dry wells. It is admitted that possibly refined and more accurate volume and pressure data are obtained by such action but when the enormous waste of gas is taken into consideration such refinement of data does not appear justified. Very complete tests for volume and pressure having been carried out at the Viking wells during 1932, at which representatives of the Hudson's Bay Oil and Gas Company participated, it is strange that the company should desire a repetition of the work with the accompanying great waste of gas.

During the Viking tests, many of the wells appear to have shown excessive moisture and information has been received from the management that the wells most affected would be repaired. It is known that the Gas Company personnel favour the theory of edge water inundation in the gas horizon. This theory, however, does not appear tenable owing to the comparative flatness of the strata beds. Most of the present productive wells have been in use many years and having been drilled without adequate cementations the casings must in many of the wells be seriously corroded similar to what has been proven was the cause of water trouble at Medicine Hat. It is, therefore, reasonable to assume that the presence of water in the Viking wells is solely due to water finding ingress through defective casings.

During the year a special inspection had to be made of developments carried out by the International Bitumen Company near the Athabasca River at approximately sixty miles north of McMurray. Occasion was taken to make a hurried survey of the bituminous sand outcrops, also of the different places where attempts had been made to explore the sands by well drilling.

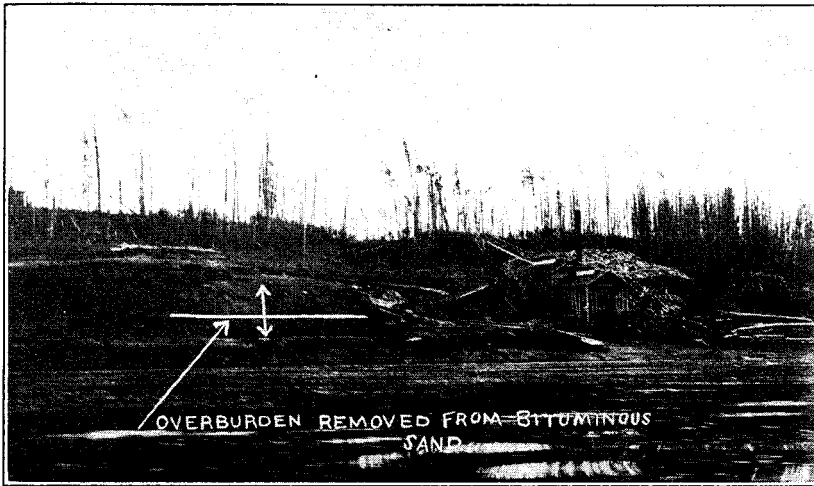
Information regarding the deposits of bituminous sands having been very thoroughly detailed in publications issued by the federal Department of Mines, further reference appears unnecessary.

At all of the places where drilling had been attempted there were many evidences that in most cases the drilling equipment used in the testing had been too light in construction for exploratory work, also that no effort appears to have been made at any well to exclude water at depth. These test well sites, however, are widely separated and the liquid product of the sands being very viscid any detrimental effects from faulty water shut offs will be limited in area.

From observations noted at many points where formation outcrops were seen, the bituminous sand deposits are underlain by limestone, the surface of the latter having many small folds limited in uplift but sufficient in height to permit of considerable depressions between individual folds. At such depression points it was also noted that greater saturation of the sands was apparent. Confirming this, where wells had been drilled in depressions of the limestone, there was considerable weathered bitumen at the surface surrounding the well orifice. Further confirmation of such increased saturation was learned from the logs of the several shallow wells drilled by the International Bitumen Company all of which had to be abandoned at shallow depth on account of the impenetrability of the bitumen at the well bottoms. From these evidences it has been concluded that semi-liquid bitumen can be produced from drilled wells subject to these being sufficiently large in diameter to permit the installation of some form of mechanical elevator as the bitumen is too glutinous to be elevated by means of ordinary deep well pumps.

Having failed to economically extract from the drilled wells the semi-liquid bitumen, the International Bitumen Company abandoned all well drilling and concentrated on the production of bitumen by processing the sand, the procedure being to remove the bitumen by means of hot water in horizontal separators

and pug mills. On the authority of the management it was learned that approximately 15 per cent to 30 per cent of clean bitumen was recovered. An examination of the treated sand showed that although considerable discolouration remained the sand had to be classed as comparatively free from bitumen.



International Bitumen Company's sand quarry and processing plant

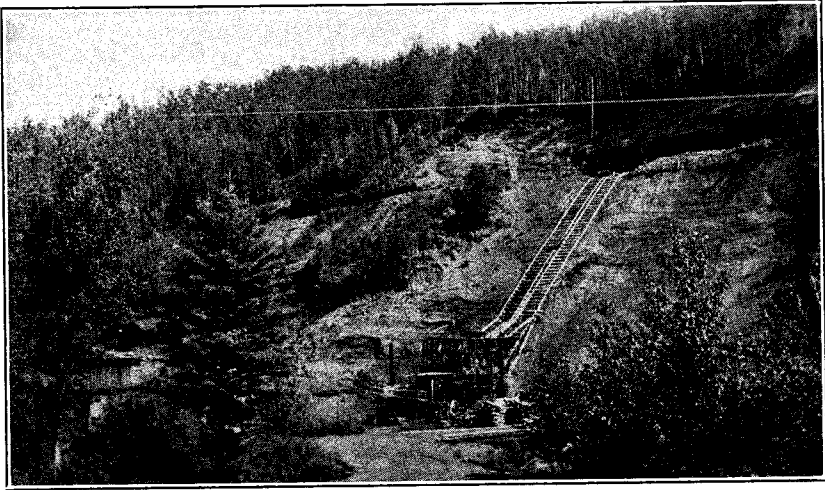
On the left of the above photograph is marked the area from which the raw sand is drawn. Excavation is accomplished by drag-line bucket, which facilitates, as the sand body becomes deepened, the noting of increasing bituminous saturation.

Indications of other operations to develop the bituminous sands were noted on the north bank of the Clearwater River nearly opposite Waterways. Here the Research Council of Alberta erected an experimental plant for processing the sand which was excavated from an adjoining area where the overburden had been removed. From the appearance of the plant it was evident that operations had been suspended for a considerable time.



Clearwater experimental plant erected by the Research Council of Alberta

Adjoining the railway at Draper, much of the sand body frontage has been removed. All of the excavated sand was apparently loaded on rails and forwarded in its crude state to distant points of the Province and beyond. During inspection a small quantity of the sand was being loaded on rail cars for forwarding to Medicine Hat.



Opencast working at Draper

The remaining bituminous sand development visited was that close to Waterways where experimental work was carried out by the Bituminous Sand Extraction Company. The experiments would appear to have been centred on ignition of the bitumen at the bottom of the shallow drilled wells. A certain amount of success was apparently realized but from the burnt appearance of several casing pipes found at the site of one of the test wells it was evident that the combustion of the bitumen created an intense local heat which must have destroyed all the volatile hydrocarbons *in situ*. The localization of the heat was seen at the site of a well where the cliff face had been cut down. This



Sectional opening of well—Bituminous Sand Extraction Company



apparently was done to open the well sectionally to obtain information on the heat penetration, which however was very limited. All equipment and materials had been removed from the area and no work was in progress.

The principal data on oil and gas operations in the Province during the fiscal year appear in detail in Exhibit A of this report.

In conclusion it is necessary to record with pleasure that all members of the limited divisional staff have willingly and energetically carried out the many arduous duties which the work of the Division demands and further that every effort has been made to promptly advise and assist operators, particularly in the many engineering difficulties encountered during the drilling of wells.

# EXHIBIT A.

## OIL PRODUCTION FOR FISCAL YEAR

Barrels of 35 Imperial Gallons

1.	Turner Valley, naphtha .....	1,082,816 bbl.
	Turner Valley, light crude .....	26,078 "
	Red Coulee, light crude .....	27,246 "
	Wainwright, heavy crude .....	4,609 "
	Sundry production .....	724 "
	<b>TOTAL</b> .....	<b>1,141,473 bbl.</b>

## TOTAL OIL PRODUCTION IN PROVINCE SINCE 1925

Calendar Year	Naphtha	Light Crude	Heavy Crude	Totals
1925 .....	165,717	2,926	.....	168,643 bbl.
1926 .....	211,008	2,609	5,981	219,598 "
1927 .....	290,270	38,808	3,055	332,133 "
1928 .....	410,623	70,734	8,174	489,531 "
1929 .....	908,741	73,808	16,603	999,152 "
1930 .....	1,314,039	104,462	15,343	1,433,844 "
1931 .....	1,345,689	92,002	17,504	1,455,195 "
1932 .....	854,116	56,371	6,935	917,622 "
January 1st to March 31st, 1933	192,093	13,873	1,842	207,808 "
Fiscal year ended Mar. 31st, 1934	1,082,816	54,048	4,609	1,141,473 "
<b>TOTALS</b> .....	<b>6,775,112</b>	<b>509,841</b>	<b>80,046</b>	<b>7,364,999 bbl.</b>

2.	VALUE OF PRODUCTION, 1933-1934				
Naphtha .....	1,082,816	bbl.	at	\$2.62 .....	\$2,836,977.92
Light crude, Turner Valley .....	26,078	"	"	\$2.50 .....	65,195.00
Light crude, Red Coulee and other areas .....	27,970	"	"	\$1.10 .....	30,767.00
Heavy crude .....	4,609	"	"	\$1.00 .....	4,609.00
TOTAL .....					\$2,937,548.92

3.

OIL PRODUCING WELLS IN PROVINCE			
	Producing	Shut in	Total
Turner Valley—naphtha and gas .....	90	3	93
Turner Valley—light crude only .....	8	.....	8
Red Coulee—light crude only .....	6	.....	6
Wainwright—heavy crude .....	3	4	7
Skiff—heavy crude .....	.....	1	1
<b>TOTAL</b> .....	<b>107</b>	<b>8</b>	<b>115</b>

4.	GAS WELLS NOT INCLUDED WITH NAPHTHA PRODUCING WELLS			
		Producing	Shut in	Total
Medicine Hat	.....	46	.....	46
Bow Island	.....	.....	11	11
Foremost	.....	.....	6	6
Milk River area	.....	1	2	3
Viking	.....	23	.....	23
Kinsella	.....	.....	3	3
Fabyan	.....	2	.....	2
Brooks	.....	5	.....	5
Wetaskiwin	.....	1	.....	1
		<hr/>	<hr/>	<hr/>
TOTAL	.....	78	22	100

## FOOTAGE DRILLED IN WELLS

Turner Valley area .....	65,773
Other areas in Province .....	16,600
<b>TOTAL</b> .....	<b>82,373</b>

## 6. TOTAL YEARLY WELL FOOTAGE DRILLED IN PROVINCE SINCE 1927

1927 .....	84,966 feet
1928 .....	190,288 "
1929 .....	414,757 "
1930 .....	295,752 "
1931 .....	127,243 "
1932 .....	40,492 "
1933 .....	82,373 "

## 7. OIL IMPORTS TO ALBERTA

1931 .....	1,323,826 bbl.
1932 .....	1,090,464 "
1933 .....	1,266,161 "

## 8. GAS CONSUMPTION IN ALBERTA

Calendar Year		Estimated value at two cents per M.c.f. at well mouth*
1927 .....	12,621,857 M.c.f.	\$252,437.14
1928 .....	14,198,959 "	283,979.18
1929 .....	23,228,637 "	464,572.74
1930 .....	23,312,006 "	466,240.12
1931 .....	18,327,139 "	366,542.78
1932 .....	6,144,265 "	122,885.30
January 1st to March 31st, 1933 .....	16,061,383 "	321,227.66
Fiscal year ended March 31st, 1934 .....	16,346,376 "	326,927.52

\*M.c.f.—Thousand cubic feet.

## 9. GAS REPRESSURING BOW ISLAND FIELD

The quantity of Turner Valley waste gas injected into wells of the above area totalled at the end of March, 1934, 6,055,111 M.c.f. At the commencement of repressuring, the field pressure averaged 248 lbs. per square inch; this had been raised to 451 lbs. per square inch at the end of the fiscal year.

## 10. 1933 GAS WELL PRESSURES IN LBS. PER SQUARE INCH

	Greatest	Lowest
Turner Valley .....	1,690	535
Medicine Hat, average .....		412
Redcliff .....		405
Bow Island .....		430
Foremost .....		583
Barnwell .....		241
Range Oil and Gas Company .....		1,030
Brooks .....	354	175
Viking .....		615
Kinsella .....		754

## 11. DIVISIONAL INSPECTIONS OF WELLS

Special .....	188
General .....	842
Gas measurements .....	1,571
<b>TOTAL</b> .....	<b>2,601</b>

Special journeys by the Director of the Division, in addition to the above, totalled sixty days absence from Edmonton.

## 12. DIVISIONAL GEOLOGICAL EXAMINATIONS OF WELL SAMPLES

1932-33 .....	3,998 samples examined
1933-34 .....	7,373 " "

## CHEMICAL ANALYSES

Water .....	12
Oil .....	10
Gas .....	2
<b>TOTAL</b> .....	<b>24</b>

EXHIBIT B.

STATEMENT OF TURNER VALLEY ALLOWABLE WITHDRAWALS OF GAS  
AS INTIMATED TO OPERATORS, APRIL 3rd, 1933

	Cubic feet.		Cubic feet.
Albertan Federated .....	725,000	Dalhousie No. 7 .....	3,406,000
Alberta Pacific Consolidated No. 1 .....	264,000	Foothills No. 1 .....	4,200,000
Alberta Pacific Consolidated No. 2 .....	850,000	Foothills No. 2 .....	1,744,000
British Dominion No. 2 .....	1,496,000	Mayland No. 1 .....	3,843,000
British Dominion No. 3 .....	1,021,000	Mayland No. 2 .....	2,811,000
Calmont No. 2 .....	7,104,000	Mayland No. 3 .....	1,324,000
Calmont No. 4 .....	259,000	Mayland No. 6 .....	8,292,000
Calmont No. 7 .....	696,000	Royalite No. 6 .....	5,876,000
Canada Southern (Regent) No. 1 .....	709,000	Royalite No. 12 .....	627,000
Canada Southern (Regent) No. 3 .....	1,320,000	Royalite No. 8 .....	3,009,000
Commonwealth Petroleum No. 1 .....	3,098,000	Royalite No. 11 .....	12,024,000
East Crest No. 1 .....	718,000	Royalite No. 20 .....	381,000
East Crest No. 2A .....	5,605,000	Royalite No. 9 .....	1,196,000
East Crest No. 3 .....	3,579,000	Royalite No. 13 .....	233,000
Freehold No. 2 .....	2,600,000	Royalite No. 18 .....	6,480,000
Hargal Oils, Limited .....	589,000	Royalite No. 14 .....	2,173,000
Homestead Oils, Limited .....	938,000	Royalite No. 16 .....	437,000
Hvlo Oils, Limited .....	5,170,000	Royalite No. 17 .....	7,200,000
McLeod No. 1 .....	877,000	Royalite No. 19 .....	4,009,000
McLeod No. 2 .....	1,433,000	Royalite No. 21 .....	1,099,000
McLeod No. 3 .....	1,921,000	Royalite No. 23 .....	4,865,000
McLeod No. 5 .....	1,468,000	Royalite No. 24 .....	1,896,000
Mercury No. 1 .....	12,942,000	Royalite No. 25 .....	1,379,000
Mercury No. 2 .....	2,000,000	Southern Lowery No. 1 .....	509,000
Mercury No. 3 .....	3,000,000	Southern Lowery No. 2 .....	4,536,000
Midfield No. 1 .....	2,748,000	Southern Lowery No. 3 .....	5,917,000
Mill City Oils, Limited .....	90,000	Southwest Petroleum No. 1 .....	946,000
Miracle No. 1 .....	3,650,000	Advance Oils No. 5A .....	1,623,000
Miracle No. 3 .....	2,600,000	Associated Petroleum No. 1 .....	2,198,000
Model No. 1 .....	1,710,000	Associated Petroleum No. 2 .....	2,304,000
New McDougall-Segur No. 2 .....	1,736,000	Baltac Oils No. 1 .....	1,190,000
New McDougall-Segur No. 3 .....	412,000	Home Oils No. 1 .....	5,787,000
New McDougall-Segur No. 4 .....	891,000	Home Oils No. 2 .....	4,026,000
Okalta No. 1 .....	3,625,000	Home Oils No. 3 .....	9,876,000
Okalta No. 2 .....	3,353,000	Home Oils No. 4 .....	3,293,000
Okalta No. 3 .....	1,446,000	Home Oils No. 5 .....	1,183,000
Richfield Petroleum No. 1 .....	1,300,000	Lowery Petroleum .....	4,140,000
Sioux City No. 1 .....	520,000	Merland Oils .....	9,690,000
Spooner Oils No. 4 .....	1,419,000	Sterling Pacific No. 1 .....	499,000
Structure Oils, Limited .....	2,025,000	Sterling Pacific No. 2 .....	5,245,000
Wellington Oil and Gas Company .....	8,375,000		
Dalhousie No. 1 .....	1,200,000		
Dalhousie No. 6 .....	397,000		
		TOTAL .....	239,345,000

EXHIBIT C.  
WELLS COMPLETED DURING THE FISCAL YEAR OR STILL IN COURSE OF DRILLING AT ITS CLOSE  
TURNER VALLEY

NAME	*Location	Drilling Started	Drilling Finished	Depth March 31, 1934	REMARKS
Anaconda No. 2	15 of 28-18-2-w. 5	28-12-32	6- 2-34	5,548	Completed: gas and naphtha.
Bow No. 1 (Illinois-Alberta)	14 of 12-20-3-w. 5	1914		3,889	Attempting to deepen.
British Dominion No. 4	6 of 28-18-2-w. 5	13- 3-34		270	Drilling.
Century Royalties No. 1	14 of 28-18-2-w. 5	10- 2-34		2,779	Drilling.
Director Royalties No. 1	16 of 28-18-2-w. 5	8- 2-34		2,480	Drilling.
Highwood Sarcee No. 1	16 of 21-18-2-w. 5	19- 9-33		5,200	Obtained good light crude production but continuing to limestone.
Hoffar Lundy No. 1	13 of 22-18-2-w. 5	15- 3-33		4,300	Suspended 17-11-33.
Livingston No. 1	5 of 24-18-2-w. 5	3-12-30		2,880	Suspended 13-9-33.
Longview N.W.C. & E. No. 1	5 of 27-18-2-w. 5	21-1-33		5,200	Drilling.
Marion No. 2	10 of 28-18-2-w. 5	10- 7-33	14- 3-34	5,670	Testing. Appears to be a small to medium naphtha producer.
Midland No. 1	16 of 1-20-3-w. 5	10-10-23	8- 7-33	4,107	Was deepened 47 feet during year.
Midland No. 2	19 of 1-20-3-w. 5	13- 5-29	22-11-33	4,232	Was deepened 137 feet during year.
Miraflo No. 1	16 of 5-19-2-w. 5	21-12-30	21- 8-33	6,723	Completed: gas and naphtha.
Miraflo No. 2 (Anaconda No. 1)	16 of 22-20-3-w. 5	28- 8-29	29- 8-33	6,739	Completed: gas and naphtha.
New McDougall-Segur No. 5	11 of 12-20-3-w. 5	30- 6-30	28- 2-34	3,185	Was deepened with negative results.
New McDougall-Segur No. 6	11 of 12-20-3-w. 5	9- 8-33	31-10-33	3,270	Completed: light crude producer.
Okalta No. 4	8 of 1-20-3-w. 5	25- 7-29		3,060	Deepened from 1,664 during year.
Pacalta No. 1	7 of 28-18-2-w. 5	29- 5-33		4,788	Drilling.
Publix No. 1	8 of 28-18-2-w. 5	11- 7-33		2,007	Drilling.
Ridgfield Royalties No. 1	5 of 28-18-2-w. 5	11- 3-34		440	Drilling.
Spooner Anaconda No. 1	1 of 28-18-2-w. 5	25- 9-33		4,665	Drilling.
Spray No. 1	9 of 5-19-2-w. 5	11- 6-29		3,795	Drilling.
Sterling Royalties No. 1	1 of 33-18-2-w. 5	11- 7-33	5-12-33	5,657	Completed: gas and naphtha.
Sunburst Midroyal No. 1	14 of 28-18-2-w. 5	1- 8-33		1,660	Suspended 20-10-33.
Union Drilling No. 1	8 of 21-18-2-w. 5	15- 3-33		2,750	Suspended 7-12-33.

FOOTHILLS NEAR TURNER VALLEY

Elbow	11 of 35-22-5-w. 5	9- 4-29		4,164	Drilling. Resumed 6-12-33.
Graystone	9 of 34-23-5-w. 5	1- 7-26		1,706	Redrilled from 1,245 and suspended 8-11-33.
Paramount	6 of 28-19-4-w. 5	20- 6-29		2,760	Suspended.
Pekisko Hills	6 of 6-17-2-w. 5	31- 1-34		140	Drilling.



## EXHIBIT D.

MEMORANDUM BY R. M. S. OWEN, PETROLEUM AND NATURAL GAS DIVISION  
OIL AND GAS POTENTIALITIES IN THE ALDERSYDE AREA.

The Aldersyde area is situated in south-western Alberta about twenty miles south of the city of Calgary. Much of the subsurface geology of this area has been obtained from the log of the Ranchmen's No. 1 well located in legal subdivision 16, section 13, township 20, range 29, west of the 4th meridian, close to the town of Aldersyde and approximately seventeen miles east of the Turner Valley field. After intermittent drilling operations conducted since the year 1917, Ranchmen's No. 1 now represents the nearest well to Turner Valley which, lying within the plains area, has approached to geological horizons known to be productive in the above mentioned foothills' field.

Ranchmen's No. 1 commenced drilling in strata very much younger in age than those exposed in Turner Valley and did not reach the Benton formation in which most Turner Valley wells start until a depth of 4,270 feet had been attained. At the present depth of 6,260 feet geological examination of samples suggests that the well is close to the base of the Benton. An analysis of the gas obtained at this point discloses a very high ethane content hitherto not found in gases occurring in beds of this age and indicating its possible association with heavier hydrocarbons. The analysis of this gas is as follows:

Carbon dioxide .....	1.4%
Oxygen .....	0.2%
Methane .....	71.6%
Ethane .....	23.0%
Nitrogen (by difference) .....	3.8%

The sulphur content (20 grains per 100 cubic feet) is far below that found in Turner Valley gases.

Should the well be close to the base of the Benton at this depth the thickness of the latter will not be greatly in excess of 2,000 feet in this area as compared with a thickness of about 2,800 feet in Turner Valley. In the latter field the stratigraphical thickness between the base of the Benton and the top of the Palaeozoic limestone (the main producing strata in that area) is about 1,450 feet. Should a corresponding decrease occur in the thickness of these beds, as appears very probable, the Palaeozoic limestone may be encountered in the Ranchmen's well close to 7,300 feet from the surface, a depth already surpassed by one Turner Valley well.

The nearest well to Turner Valley, situated within the plains, to reach the Palaeozoic limestone was the Hudson Bay Keho No. 1 located in legal subdivision 2, section 17, township 11, range 22, west of the 4th meridian (distant about seventy miles) at which horizon good showings of oil were encountered. Other wells on the eastern limb of the Alberta geosyncline have similarly shown the presence of oil at this horizon while the closer proximity of the Ranchmen's well to Turner Valley may prove a favourable factor should this well reach the Palaeozoic.

However many producing oil sands occur between the base of the Benton and the top of the Palaeozoic in Turner Valley such as the McDougall-Segur, Home, Dalhousie and Brown sands and it is possible the easterly equivalents of these sands in the Ranchmen's No. 1 area may prove equally productive. These sands should be encountered within the next 1,000 feet of drilling. The easterly limit to the lateral extension of the Fernie beds of Jurassic age from the Turner Valley area is at present unknown and much may depend on the presence or absence of these beds in this area since there is evidence to show that beds of this age may be the source of much of the oil in this Province.

Structurally Ranchmen's No. 1 is situated close to the centre of the asymmetrical Alberta geosyncline, a large basin of deposition lying immediately to

the east of the foothills, the latter, to some extent, being thrust over the former as may be seen from the accompanying geological section. This large overthrust of the frontal part of the foothills on to the plains undoubtedly resulted in the formation of folds within the latter and it is towards the location of these subsidiary structures within the geosyncline that future work should be directed. It is not known how far east of the foothills such disturbances exist or whether Ranchmen's No. 1 is favourably located in this respect. Such facts will possibly be best determined by geophysical means, the varying character of the beds in this general area providing excellent reflection surfaces for waves as generated in the seismic method. Lateral thinning out of porous horizons up the dip which may be expected in this location should prove a favourable factor for the accumulation of oil. Prospecting within this area necessitates very deep drilling but compensation lies in the absence of pronounced irregularities in the geological structure thus leading to less hazardous drilling and the knowledge that all prospective horizons can be encountered.

An interesting fact is that during the drilling of Ranchmen's No. 1 no water was encountered in the many porous horizons penetrated beyond surface water at 24 feet and a small inflow of 5 barrels a day at 3,892 feet. Thus although the Ranchmen's well is located towards the centre of the Alberta geosyncline the facts reveal that the latter is far from being waterlogged and should a similar condition be found to exist in the Palaeozoic limestone it will help to dispel the fear many express of the possibility of approaching edge-water in the Turner Valley field.

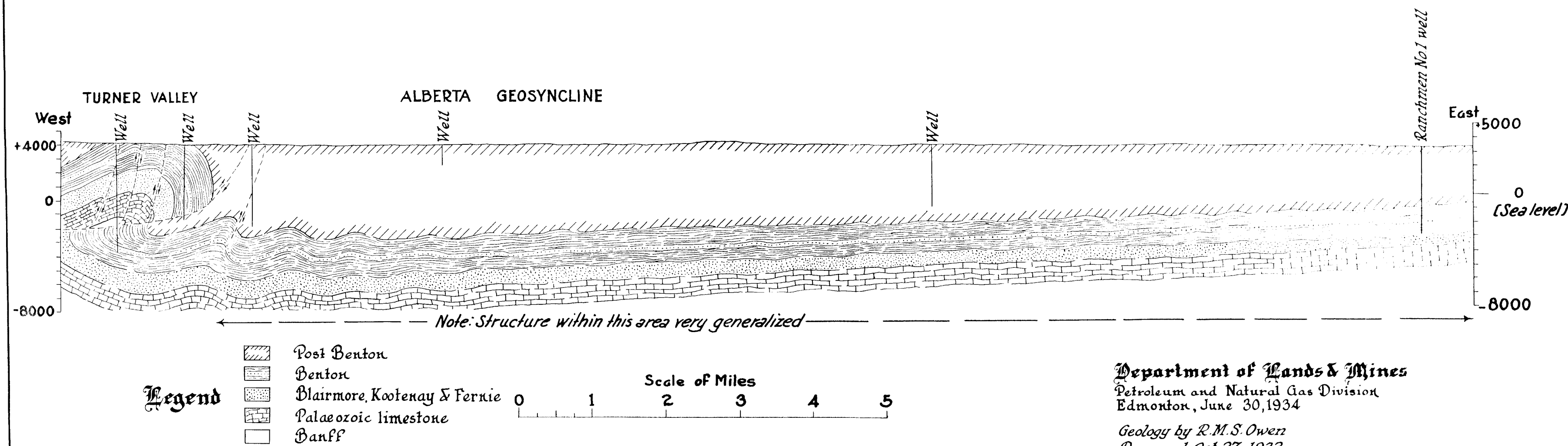
In closing it may be stated that some of the world's largest oilfields are located in geosynclinal areas and on subsidiary folds within the latter. However small any evidence of oil in the Ranchmen's well may eventually prove to be, such indications would be of great importance in showing the possibility of oil in commercial quantities occurring in probably more favourable locations within this general area, such locations as already stated, being best determined by means of geophysical prospecting.

October 27th, 1932.





# GENERALIZED STRUCTURE SECTION FROM TURNER VALLEY TO ALDERSYDE



Department of Lands & Mines  
Petroleum and Natural Gas Division  
Edmonton, June 30, 1934  
Geology by R.M.S. Owen  
Prepared Oct. 27, 1932.

TRACING TECHNICAL DIVISION  
DEPT. LANDS & MINES

EXHIBIT E.



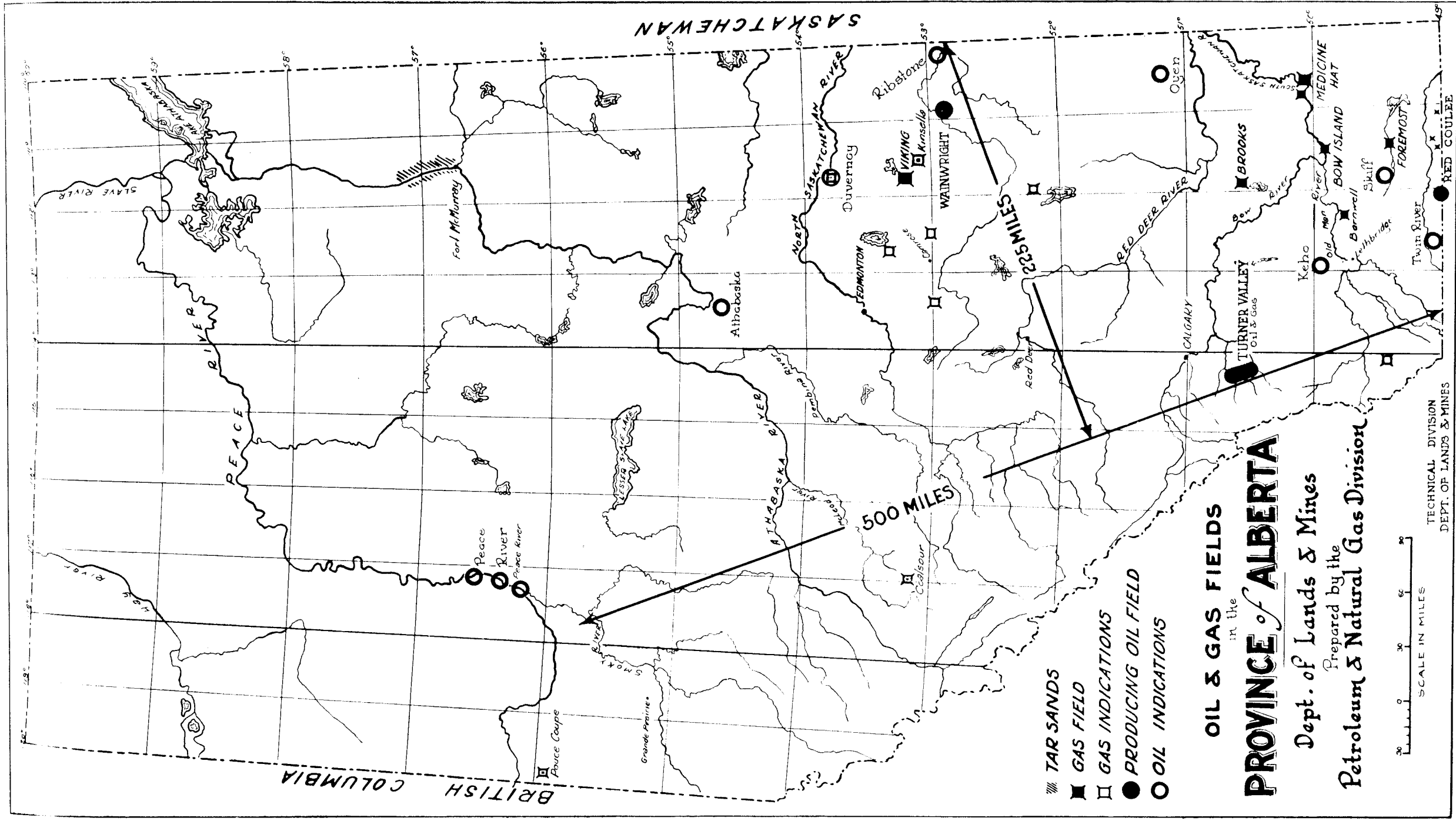


EXHIBIT F.



## Forestry

### REPORT OF THE DIRECTOR OF FORESTRY, T. F. BLEFGEN

This report covers the fiscal year ended March 31st, 1934. During the period under review the work of the Forest Service in so far as it was concerned with forestry in its various phases remained as reported for the previous year.

There was, however, an enlargement of responsibility in at least one direction. The Department recognized the necessity of providing for certain sub-agency land office services as almost all of the sub-agencies had been abolished. It was, therefore, arranged that each timber inspector should undertake, within the division for which he was responsible, the duties of sub-agent at points convenient alike to the public and the inspector on set dates.

A considerable amount of sub-agency work was dealt with by the inspectors and also by the forest superintendent and forest clerk at Rocky Mountain House. It should be noted, however, that this additional work, which is outside the normal duties of the various forest officers, interferes to a very great extent with movements inside their territory for the reason that it is seldom the regular work can be arranged to suit the set dates for sub-agency work without loss of time over that actually required for the latter duties. In addition to this, it is pointed out that supervision of the ranger staff is not as close as is desirable.

Conditions in the lumber industry remained on almost the same level as the previous year, though an improvement in the market was noticeable, which was due principally to the exhaustion of stocks. Railway tie manufacturing operations increased with the necessity of making replacements. Briefly, there has been little or no increase in lumbering operations, a slight betterment of market prices and an increase in tie-making operations. The advance has not been outstanding, although, in comparison with immediately preceding year, it is encouraging.

The forest fire season was about a normal one. Certain large sections of the Province produced rather hazardous conditions and a few very destructive fires resulted, in which instances control was difficult and expensive. Year after year it may be noted that there is a wide variation in weather conditions if Alberta is reviewed as a whole. It follows that some section of the Province will usually experience that combination of weather conditions which will produce a hazard, and that only in exceptional years such as 1932 will the Province be comparatively free of destructive fires.

A few unemployment relief camps were operated in the forest reserve in the southern part of the Province and supervision of the work undertaken required a degree of attention from the officers directly concerned.

The administration and protection of provincial forest reserves is a matter which gives some concern. The management of this territory involves the maintenance of many completed improvement projects constructed for protective and administrative purposes. Under existing conditions of staff employment it is extremely difficult and often impossible to have certain types of work attended to at the proper time.

There has been no change in the organization as outlined in the report of 1932. Forest protective and administrative staffs remain at the same strength and deal with the identical territory previously described. In some instances

administration work, and in many instances protection work, suffers by reason of reduced staff and the period of employment.

#### FOREST PROTECTION

Forest protection since its inception in this Province has primarily been concerned with fire protection. A close watch has been kept for abnormal destruction by insects and fungi, but up to the present losses from these causes have been comparatively small. While losses due to fires have provided by far the greatest destruction, it has been evident that in certain sections of the Province the more mature stands of spruce have been subject to a great deal of destruction by being windthrown. It would appear that this form of destruction results from a combination of conditions and is the cause of some concern, particularly in connection with stands of mature timber in the Buck Lake district. It should be pointed out that some of the operators have attacked this problem by making special efforts to salvage windthrown timber. It is commonly remarked that strong winds are now much more prevalent than a number of years ago.

The winter of 1932-33 was characterized by a very heavy fall of snow, and due to the absence of chinook winds this snow was only removed by the spring thaw which was later than usual. In the southern mountain region the snow disappeared earlier than in the northern mountains and the first forest fire in the south occurred on May 13th. From the Clearwater valley north there was no early spring fire danger. Subnormal precipitation during June and a continuance of this condition through July and into August resulted in a prolonged fire danger period over the entire mountain and foothill region. This embraced the Cypress Hills forest reserve, the Rocky Mountains forest reserve, districts 1 and 2 of the Northern Alberta forest district under Clearwater forest supervision and the Edmonton, Edson and Grande Prairie divisions of the Northern Alberta forest district.

The danger abated greatly in the latter part of August, the relief being general. This danger period was one of high winds and temperatures, low humidity and a general absence of rainfall. The rainstorms that did occur during this period afforded only limited relief as they were purely local in coverage. It will be understood, therefore, that certain areas were in a particularly hazardous condition. A counteracting factor during the early part of this period was the abundant growth of underbrush, annual plants, etc., which growth in the early summer had a retarding effect on ignition and spread of fire.

An early fall danger period which was generally effective over the Province occurred in the latter part of September and the fore part of October. The fire season was brought to a close by the general snow storm of late October although in one region, namely, the Brazeau division of the Brazeau-Athabaska forest, chinook winds cleared most of the snow away and a danger period of a month's duration was experienced between November 5th and December 5th.

The danger period during which fires were the most difficult to suppress was the one which occurred during July and August, and it was during this time that the most destructive fires were acted upon. In the mountain region this period was slightly more than two and a half months in duration which was a most abnormal condition.

#### FIRE PREVENTION

The effort to deal more thoroughly with the major causes or sources of fires was continued, and with a degree of success. In the spring there is usually a period during which burning may be accomplished with little or no danger to

public and private property. As a general rule this period is not a lengthy one and under normal conditions it gradually merges into the spring danger period. Every effort is made to have settlers do all of their burning in the safe period and it is highly desirable that the rangers be on duty sufficiently early to take an active part in the spring burning campaign so that they may encourage safe burning under permit and advise the new and often inexperienced settler.

In certain districts honorary fire guardians have been appointed in order that burning permits may be secured with a minimum of trouble.

In the southern part of the Province an annual restriction on the use of outdoor fires is effective. This has in view the protection of vast areas of range and forest territory along the east slope of the mountains. The district affected is that enclosed by the following boundaries: on the north by the Bow river, on the south by the international boundary, on the east by the western limit of the right of way of the Calgary and Edmonton railway from its intersection with the Bow river in township 24, range 1, west of the 5th meridian, to its intersection with the east boundary of township 9, range 26, west of the 4th meridian, thence south along the said boundary of range 26 to its intersection with the international boundary and on the west by the boundary of Alberta and British Columbia. In this area fires for camping and other use out of doors are prohibited between the first day of August and the first day of December in each year. This restriction would be more effective if the opening date were advanced at least two weeks.

As reported previously camp sites are gradually being improved in the southern part of the Rocky Mountains forest reserve, this being done with a view to restricting the greater portion of camping to safe camp sites and localizing as far as possible the hazard arising from campers.

During the past year officials and employees of the various railways continued to co-operate in matters of fire prevention and suppression in a highly satisfactory manner. In addition the officers of the Board of Railway Commissioners for Canada again rendered valuable assistance through their work in connection with the use and maintenance of fire prevention equipment installed on locomotives and rolling stock used in the Province.

#### BURNING PERMITS ISSUED IN ALBERTA 1933

Northern Alberta Forest District:	
Edmonton .....	85
Edson .....	192
Athabaska .....	64
Bonnyville .....	2
McMurray .....	20
Slave Lake .....	336
Grande Prairie .....	401
Peace River .....	63
	<hr/> 1163
Forest Reserves:	
Cypress Hills .....	
Crowsnest-Bow River .....	
Clearwater .....	266
Brazeau-Athabaska .....	11
	<hr/> 277
Honorary Fire Guardians .....	323
	<hr/> 323
Municipalities .....	521
	<hr/> 521
TOTAL .....	<hr/> 2,284

It will be evident that the requirements of the regulations for the prevention of prairie and forest fires with respect to burning permits are not being enforced in many localities. In the Northern Alberta forest district the only enforcement is that which can be secured through the efforts of the ranger staff assisted by the Royal Canadian Mounted Police and the honorary fire guardians. Enforcement within established municipal districts is a matter for municipal officers.

## PROSECUTIONS AND CONVICTIONS—PRAIRIE FIRES ACT, 1933

	Prosecutions	Convictions
Instituted by the R.C.M.P. ....	14	13
Instituted by the Alberta Forest Service .....	13	11
TOTALS .....	27	24

*Fire Detection.*

There is no change to report in connection with established fire detection services and no addition or extension has been made to those services. Where the look out system is in operation it continues to provide a highly satisfactory and accurate means of fire detection. The area covered by this form of detection is comparatively small and further extension must be made before even the important and accessible stands of mature timber are properly covered.

*Fire Suppression.*

Other conditions remaining unchanged, the cost of fire suppression gives a fairly accurate indication of the nature of fire season experienced as related to uncontrollable factors. The season under review was a difficult one in that in the territory where prevailing conditions make fire suppression difficult and expensive, the danger period was greatly prolonged. The territory referred to is the mountain and foothill area together with adjacent areas which are influenced to a degree by weather conditions which prevailed in these higher altitudes.

The season under review may be considered about average from the standpoint of suppression costs. Under prevailing circumstances, these costs will more often be over than under this season's total figure and the variation will be greater on the over-run side. It will be realized that with staff and equipment, in fixed number and quantity respectively, it would be possible to deal with conditions only up to a given proportion, beyond which in the case of fire suppression, efficiency breaks down as the fire situation gains in intensity.

During the year the Forest Service dealt with 288 fires which burned over 93,765 acres of land, of which 5,136 acres were private lands and 30,955 acres non-forested. The cost of suppression action was \$35,381.67, of which \$4,366.58 represents ranger labour. The total loss in timber including cordwood and young growth was estimated to be \$193,972.36. Only one fire occurred in the Cypress Hills forest reserve which was designated Class A and which caused no damage.

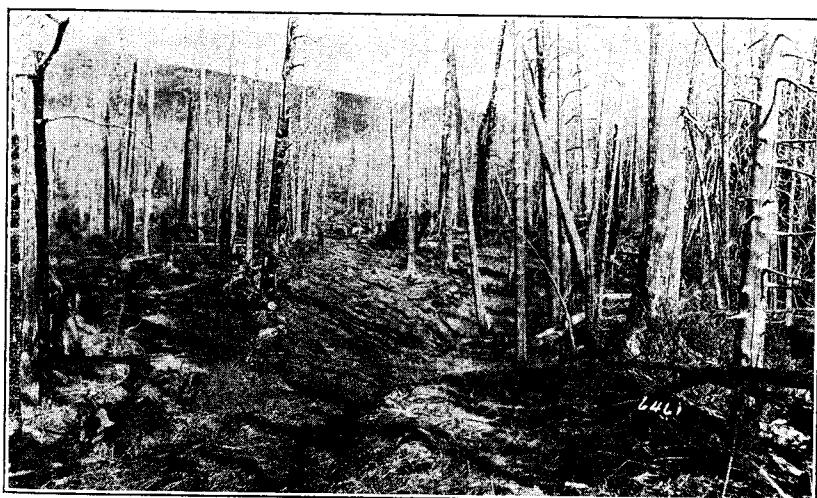
A comparison with the fire season of 1932 points to the difference between suppression action in mountain and foothill country and goes a long way towards confirming the presumption that fires in the higher and more rugged country are more difficult to control than those which occur in the lower and flatter country.

In 1932 the Forest Service dealt with 379 fires which burned over 136,117 acres, of which 68,253 acres were non-forested. The cost of suppression action was \$15,653.46, exclusive of ranger labour. In 1932 there were almost 100 more fires than in 1933 though in the former year the cost of suppression was approximately one-half of the latter. In 1932 there were within the forest reserves 32 fires, involving suppression costs of \$3,491.04. These fires were made up of 18 class A, 11 class B, 1 class C, and 2 class D. In 1933 there were 39 fires made up of 22 class A, 11 class B, 2 class C and 4 class D, all of which involved a suppression expenditure of \$16,661.68 plus \$1,748.24 for ranger labour. Of the above amount, and not including ranger labour, \$12,536.31 was spent in the period July 15th to July 28th, inclusive, on 8 fires made up of 2 class A, 1 class B, 2 class C and 3 class D. These 8 fires, 3 of which were over 500 acres in extent, burned over a total of 14,766 acres, causing an estimated loss of \$24,880.00. These features are brought out to show how

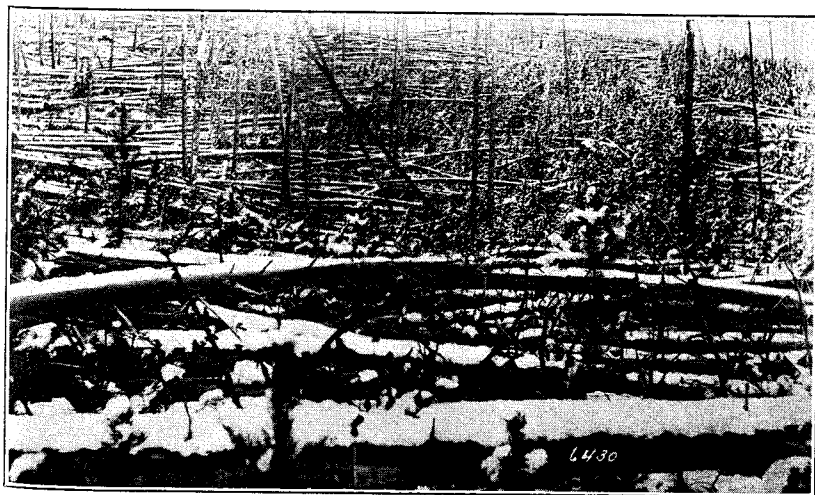


serious the situation can become in the east slope territory, the difficulty and costliness in dealing with these fires and the necessity for an effective organization in this area. They also account for a large portion of suppression costs during the past season and indicate the most dangerous part of that season in the mountain region.

August 5th to August 30th, inclusive, provided another dangerous period in the northern mountain and foothill territory. In the Brazeau-Athabaska forest the July danger period led on into that of August without real relief. In this portion of the Rocky Mountains forest reserve and the adjacent divisions of the Northern Alberta forest district—Grande Prairie, Athabaska and Edson—there were 35 fires in this period made up of 9 class A, 9 class B, 9 class C and 8 class D, which involved a suppression cost of \$10,422.39, exclusive of ranger labour. These fires burned over 27,733 acres, causing an estimated loss of \$123,212.83. These two periods account for over two-thirds of suppression costs and approximately three-quarters of the estimated loss.



Trail through burnt timber in the Brazeau Forest near Pembina River



Lodgepole pine windfall and reproduction after a fire

*Causes.*

It will be noted in the statement covering fires by causes that the camp fire was the greatest source of danger followed by settlers, smokers and incendiary fires in that order. The proportion of large to small fires is interesting in connection with the above mentioned causes. Of further interest is the percentage of the total number of fires chargeable to each cause and a comparison of the figures with those of 1932.

## COMPARISON OF FIRE CAUSES BY PERCENTAGE

Cause.	1932	1933
Campers .....	52.8	38.9
Smokers .....	5.3	13.5
Settlers .....	17.1	17.4
Railways .....	4.5	2.8
Lightning .....	2.6	5.2
Industrial operations .....	1.1	1.7
Incendiary .....	8.2	11.8
Public Works .....	.5	1.4
Unclassified .....	1.6	....
Unknown .....	6.3	7.3

## RAILWAY FIRE LOSSES--CALENDAR YEAR, 1933

Within the Province of Alberta on those forested areas under the supervision of the Alberta Forest Service. This summary includes only those fires which started within 300 feet of the centre line of the right of way of the railway.

	Northern Alberta Railways	Canadian National Railways	Canadian Pacific Railways	Totals
<i>Causes and Number of Fires:</i>				
Locomotives .....	....	1	1	2
Railway employees .....	2	....	....	2
Campers and travellers .....	6	6	....	12
Settlers .....	2	....	2	4
Unclassified .....	....	2	1	3
Unknown .....	2	....	....	2
TOTALS .....	12	9	4	25
<i>Number of Acres Burned:</i>				
Slashing or old burn .....	....	....	140	140
Young growth .....	18¼	....	45	63¼
Not forested .....	270	40½	16½	327
TOTALS .....	288¼	40½	201½	530¼
<i>Loss:</i>				
Timber .....	....	....	\$400.00	\$400.00
Young growth .....	\$75.75	....	112.50	188.25
Forest products .....	....	\$120.00	....	120.00
Other property .....	....	150.00	....	150.00
TOTALS .....	\$75.75	\$270.00	\$512.50	\$858.25

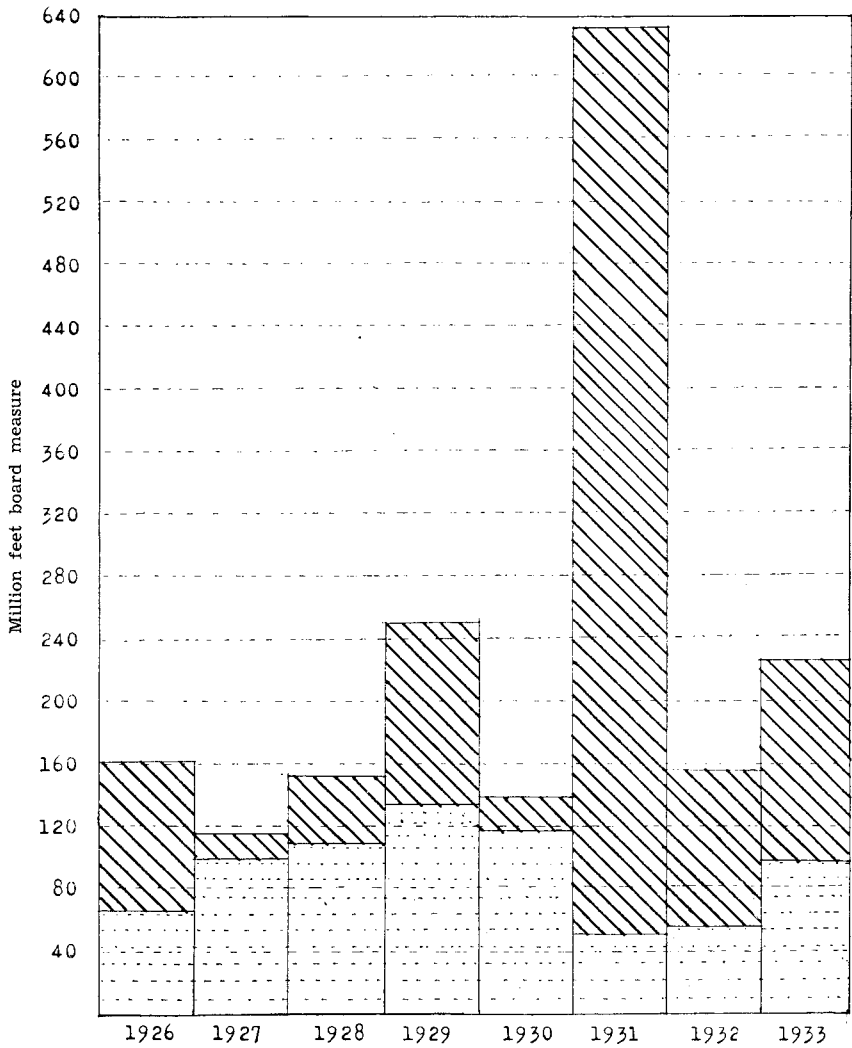
ANNUAL STATEMENT OF FIRES BY CAUSES, MONTHLY DISTRIBUTION, ETC., WITHIN FOREST RESERVES, ALBERTA—CALENDAR YEAR 1933

Cause	Number					Damage	Area	Monthly Distribution												Prosecutions	Convictions	Fires Inside Provincial Forests		Fires Outside Provincial Forests			
	Tot. P.C.							Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			No.	Area	No.	Area		
	A	B	C	D																							
Camp-fires	7	2	...	3	12	30.8	\$91,649.95	Acres 27,186.37	...	...	...	...	...	1	...	6	4	...	1	...	...	5	4	12	Acres 27,186.38	...	...
Smokers	6	3	...	...	9	23.1	23.50	9	...	...	...	...	1	1	4	2	2	...	...	...	...	1	1	9	...	...	...
Settlers	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Railways	...	2	...	...	2	5.1	...	1.50	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
Lightning	8	1	2	...	11	28.2	864.83	374.25	...	...	...	...	1	...	2	9	...	...	...	...	...	...	2	11	374.25	...	...
Industrial	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Operations	1	1	...	...	2	5.1	2.50	1	...	...	...	...	1	...	...	...	...	...	...	1	...	...	2	2	1	...	...
Incendary	...	2	...	...	2	5.1	6.15	3.75	...	...	...	...	1	...	...	1	...	...	...	...	...	...	2	2	3.75	...	...
Public Works	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Unclassified	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Unknown	...	...	...	1	1	2.6	3,250.00	1,700	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	1,700	...	...	...
Totals	22	11	2	4	39	100	\$95,796.93	29,275.87	...	...	...	...	5	4	11	16	...	2	1	...	6	5	39	29,275.88	...	...	...
Per cent.	56.4	28.2	5.1	10.3	100	...	...	...	...	...	...	...	12.8	10.3	28.2	41.0	...	5.1	2.6	...	...	...	...	...	...	...	...







GRAPH OF TIMBER DEPLETION, PROVINCE OF ALBERTA  
1926 TO 1933, INCLUSIVE



During this period the total depletion was 1,834,653,880 F.B.M., of which 39.82% was utilized and 60.18% destroyed by fire.

Legend

-  Timber destroyed by fire
-  Timber utilized

## ANNUAL SUMMARY OF FOREST FIRE LOSSES, ALBERTA—CALENDAR YEAR 1933

## INSIDE FOREST RESERVES

FIRE CAUSES	NUMBER OF FIRES					LANDS AFFECTED							LOSS										SUPPRESSION COSTS				Burning Permits Issued
						OWNERSHIP		AREA	CONDITION				SALVABLE			UNSALVABLE			Loss of timber	Loss of Young Growth	Loss of Other Property	Total Loss	Ranger Service	Other Expenditure	Total		
	Public, Acres	Private, Acres	Merchantable Timber, Acres	Cut-over Timber, Acres	Young Growth, Acres	Not Forested, Acres	Saw-timber, M.ft., B.M.		Other, Cords	Depreciation	Saw-timber, M.ft., B.M.	Other, Cords	Loss														
								A						B	C	D	Total										
Campers .....	7	2	.....	3	12	27,186.38	.....	27,186.38	20,194.25	1,862	3,918.87	1,211.25	10	1,200	\$460.00	19,133	107,029	\$ 79,738.20	\$ 80,198.20	\$ 11,151.75	\$ 300.00	\$ 91,649.95	\$1,143.04	\$13,165.76	\$14,308.80	.....	
Smokers .....	6	3	.....	.....	9	8.75	.25	9	6.25	.....	1.50	.....	1	1	1.25	.....	25	18.75	20.00	3.50	.....	23.50	54.61	104.00	158.61	.....	
Railways .....	.....	2	.....	.....	2	1	.50	1.50	.....	.....	.....	1.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.00	.....	10.00	.....	
Lightning .....	8	1	2	.....	11	374.25	.....	374.25	322	.....	52.25	.....	15.75	.....	8.63	5.25	1,360	786.83	795.46	69.37	.....	864.83	480.54	3,001.17	3,481.71	.....	
Industrial Operations .....	1	1	.....	.....	2	1	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	2.50	.....	2.50	5.68	.....	5.68	.....	
Incendiary .....	.....	2	.....	.....	2	3.75	.....	3.75	.....	.....	2	1.75	.....	.....	.....	.....	.....	.....	.....	6.15	.....	6.15	35.91	24.96	60.87	.....	
Unknown .....	.....	.....	.....	1	1	1 700	.....	1,700	20	.....	1,280	400	.....	.....	.....	50	.....	50.00	50.00	3,200.00	.....	3,250.00	18.46	365.79	384.25	.....	
TOTALS .....	22	11	2	4	39	29,275.13	.75	29,275.88	20,542.50	1,862.25	5,255.62	1,615.50	26.75	1,201	\$469.88	19,188.25	108,414	\$ 80,593.78	\$ 81,063.66	\$ 14,433.27	\$ 300.00	\$95,796.93	\$1,748.24	\$16,661.68	\$18,409.92	.....	

## OUTSIDE FOREST RESERVES

Campers	51	16	27	6	100	9,723.25	834.12	10,557.37	3,186	422	4,984.50	1,964.87	295	3,622	\$1,951.00	1,531.50	12,373	\$ 4,448.87	\$ 6,399.87	\$ 7,765.25	\$ 910.00	\$15,075.12	\$ 701.48	\$ 3,240.52	\$ 3,942.00	...
Smokers	9	7	14	...	30	1,537.75	363	1,900.75	268.75	385	728	519	...	2,125	1,593.75	41	2,316	823.38	2,417.13	1,399.25	25.00	3,841.38	226.32	871.10	1,097.42	...
Settlers	8	10	26	6	50	16,342.50	2,913.50	19,256	6,488.50	270	611	11,886.50	510	855	651.25	306	15,406	5,886.50	6,537.75	1,150.62	65.00	7,753.37	290.62	1,845.87	2,136.49	...
Railways	1	3	2	...	6	10	65.50	75.50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lightning	...	2	2	2	4	3,355	...	3,355	228	...	2,310	817	...	...	...	556	600	730.00	730.00	1,481.25	...	2,211.25	578.23	1,113.55	1,691.78	...
Industrial Operations	1	...	...	...	...	248	32	280	...	140	80	60	...	...	...	...	700	400.00	400.00	164.06	80.00	644.06	38.78	50.60	89.38	...
Incendiary	2	6	16	8	32	21,028.75	401.50	21,430.25	4,950.50	1,129.25	3,377	11,973.50	3,575.50	7,099.50	7,480.50	8,690	22,350	19,515.00	26,995.50	6,575.75	375.00	33,946.25	565.25	3,634.39	4,199.64	...
Public Works	2	1	1	...	4	22	...	22	...	...	2	20	...	...	...	...	...	...	...	3.75	...	3.75	12.63	...	12.63	...
Unknown	4	5	6	5	20	7,086.25	526	7,612.25	2,673	180	2,735	2,024.25	3	252	7.00	30,570	5,800	30,610.00	30,617.00	5,837.50	...	36,454.50	203.28	3,597.38	3,800.66	...
TOTALS	78	48	96	27	249	59,353.50	5,135.62	64,489.12	17,794.75	2,526.25	14,827.75	29,340.37	4,383.50	13,953.50	\$11,683.50	41,694.50	59,545	\$ 62,413.75	\$ 74,097.25	\$ 24,378.18	\$ 1,533.00	\$100,008.43	\$2,618.34	\$14,353.41	\$16,971.75	...

## WITHIN AND OUTSIDE FOREST RESERVES

Campers	58	18	27	9	112	36,909.63	834.12	37,743.75	23,380.25	2,284	8,903.38	3,176.12	305	4,822	\$ 2,411.00	20,664.50	119,402	\$ 84,187.07	\$ 86,598.07	\$ 18,917.00	\$ 1,210.00	\$106,725.07	\$1,844.52	\$16,406.28	\$18,250.80	...
Smokers	15	10	14	...	39	1,546.50	363.25	1,909.75	275	385.25	729.50	520	1	2,126	1,595.00	41	2,341	842.13	2,437.13	1,402.75	25.00	3,864.88	280.93	975.10	1,256.03	...
Settlers	8	10	26	6	50	16,342.50	2,913.50	19,256	6,488.50	270	611	11,886.50	510	855	651.25	306	15,406	5,886.50	6,537.75	1,150.62	65.00	7,753.37	290.62	1,845.87	2,136.49	...
Railways	1	3	2	...	6	10	65.50	77	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lightning	...	2	2	2	15	3,729.25	...	3,729.25	550	...	2,362.25	817	15.75	...	8.63	561.25	1,960	1,516.83	1,525.46	1,550.62	...	3,076.08	1,058.77	4,114.72	5,173.49	...
Industrial Operations	2	1	2	...	5	249	32	281	...	140	81	60	...	...	...	...	700	400.00	400.00	166.56	80.00	646.56	44.46	50.60	95.06	...
Incendiary	2	8	16	8	34	21,032.50	401.50	21,434	4,950.50	1,129.25	3,379	11,975.25	3,575.50	7,099.50	7,480.50	8,690	22,350	19,515.00	26,995.50	6,581.90	375.00	33,952.40	601.16	3,659.35	4,260.51	...
Public Works	2	1	1	...	4	22	...	22	...	...	2	20	...	...	...	...	...	...	...	3.75	...	3.75	12.63	...	12.63	...
Unknown	4	5	6	6	21	8,786.25	526	9,312.25	2,693	180	4,015	2,424.25	3	252	7.00	30,620	5,800	30,660.00	30,667.00	9,037.50	...	39,704.50	221.74	3,963.17	4,184.91	...
TOTALS	100	59	98	31	288	88,628.62	5,136.37	93,765	38,337.25	4,388.50	20,083.38	30,955.87	4,410.25	15,154.50	\$12,153.38	60,882.75	167,959	\$143,007.53	\$155,160.91	\$ 38,811.45	\$ 1,833.00	\$195,805.36	\$4,366.58	\$31,015.09	\$35,381.67	...

## SUMMARY BY DIVISIONS

DIVISIONS	78	47	89	26	240	58,033.50	4,989.18	63,022.63	17,453.75	1,921.25	14,627.75	29,019.88	4,383.50	13,453	\$11,558.50	41,552	57,817	\$ 61,306.75	\$ 72,865.25	\$ 23,840.68	\$ 1,533.00	\$ 98,238.93	\$2,310.70	\$13,628.37	\$15,939.07	1,163
*N.A.F.D.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Clearwater (Outside, i.R.D. 1 & 2)	...	1	4	1	6	1,160	146.5	1,306.5	341	580	165	220.5	...	500	125.00	143	1,678	1,082.00	1,207.00	41.250	...	1,619.50	56.53	332.47	389.00	266
Clearwater (Inside)	4	2	...	1	7	11,218	...	11,218.25	9,011	1,200.25	7	1,000	10	1,200	460.00	...	47,624	17,868.00	18,328.00	8.75	300.00	18,636.75	473.63	7,101.52	7,575.15	...
Brazeau-Athabasca	6	2	1	2	11	16,275.37	...	16,275.37	11,179.25	687	3,796.87	612.25	...	...	...	18,703	59,479	61,483.20	61,483.20	12,658.00	...	74,141.20	729.26	3,903.26	4,632.52	11
Crowsnest-Bow River	11	7	4	1	23	1,941.75	...	1,942.25	352.25	...	1,486.75	103.25	16.75	1	9.88	485	1,361	1,267.58	1,277.46	1,891.52	...	3,168.98	783.53	6,049.47	6,833.05	...
Cypress Hills	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12.88	...	12.88	...
TOTALS	100	59	98	31	288	88,628.62	5,136.38	93,765	38,337.25	4,388.50	20,083.37	30,955.88	4,410.25	15,154	\$12,153.38	60,883	167,959	\$143,007.53	\$155,160.91	\$ 38,811.45	\$ 1,833.00	\$195,805.36	\$4,366.58	\$31,015.09	\$35,381.67	1,440

\*Northern Alberta Forest District.  
†Ranger District.





*Personnel.*

Coverage by staff concerned with forest protection remained as reported previously, but it was not sufficient in the Northern Alberta forest district and in the supervision of field staff both in the forest reserves and the Northern Alberta forest district.

The increasing hazard from settlement must be met by more intensive field organization with provision for a satisfactory degree of field supervision and direction. Within the forest reserves and within the area formerly administered as the Lesser Slave forest reserve, it is evident that the curtailment of the period of employment of a number of the field staff has resulted in a difficult situation in respect to the maintenance of improvements which are important in the protective and administrative organization of these areas.

*Fire-fighting Equipment.*

Under existing circumstances the replacement of obsolete and worn equipment is difficult. Equipment on charge is being properly maintained and stored. Equipment for replacements and additions is needed and at certain centres satisfactory storage facilities need to be arranged.

*Co-operation.*

The assistance received through co-operative arrangements with various government departments, both Dominion and Provincial, and other agencies and individuals concerned with or interested in forest protection has been very satisfactory and encouraging. The assistance provided voluntarily and without pre-arrangement is one of the most encouraging features to be mentioned. It has been evident that a large number of citizens in the Province realize the importance of forest cover and many of them are willing to go to great lengths to assist in forest protection. When the residents of the Province fully understand the importance of native forest cover, the difficulties of protection will be greatly reduced.

## FOREST ADMINISTRATION

*Provincial Forest Reserves.*

Timber operations continued at approximately the same level as in the preceding year and were principally those concerned with coal-mining operations and the manufacturing of railway ties. Of considerable importance to individuals is the privilege of meeting their timber and fuel wood requirements through obtaining authority to take timber under permit. This privilege is utilized extensively throughout the southern portion of the Rocky Mountains forest reserve and in the Cypress Hills forest reserve. Where possible the timber cutting operations under permit authority are confined to the taking of sound fire-killed or dead timber.

During the fiscal year 1933-34 there were 15 active and 9 inactive sales on forest reserves. Six new sales were awarded and nine were closed out due to completion of operations or failure to operate. The total amount of timber on these new sales was as follows: saw timber 16,829,000 F.B.M., mine timber 600,000 lineal feet, mine props 2,614,000 lineal feet.

Following is a summary of material cut from timber sales during the year together with value of same:

TIMBER CUT ON TIMBER SALES, ALBERTA FOREST RESERVES  
APRIL 1st, 1933, TO MARCH 31st, 1934

Forest	Lumber (F.B.M.)	Tops (pcs.)	Fence Posts (pcs.)	Railway Ties	Mine Ties	Mine Props (lin. ft.)	Building Logs (lin. ft.)	Lagging (lin. ft.)	Value
Crowsnest	691,530	524	2,350	65	5,970	285,334	22,544	.....	\$2,570.01
Bow River	70,000	.....	.....	.....	.....	.....	.....	.....	175.00
Clearwater	58,018	.....	.....	.....	.....	518,673	.....	.....	2,394.06
Brazeau	1,469,500	.....	.....	12,000	6,080	690,436	.....	136,968	6,487.37
TOTALS	2,289,048	524	2,350	12,065	12,050	1,494,443	22,544	136,968	\$11,626.44

TIMBER CUT UNDER PERMIT, ALBERTA FOREST RESERVES, FISCAL YEAR 1933-34

Forest	No. of Permits	Fuel Wood (cords)	Saw Timber F.B.M.	Fence Posts	Fence Rails	Poles (pcs.)	Mine Timber (lin. ft.)	Fence Droppers, Thinnings	Building Logs (lin. ft.)	Poles (lin. ft.)	Christmas Trees	Round Timber (lin. ft.)	Lagging (lin. ft.)	Mine Ties	Mine Props	Railway Ties
Cooking Lake	7	9	800	19,907	8,870	3,340	.....	350	100	130	2	.....	.....	.....	.....	.....
Cypress Hills	380	484	193,000	32,390	18,936	974,998	38,455	5,244	38,455	810	.....	8,765	96,100	365	.....	.....
Crowsnest-Bow River	567	4,668	707,122	6,852	.....	.....	344	.....	.....	.....	.....	.....	.....	.....	.....	60
Clearwater	19	79	.....	.....	.....	.....	4,546	.....	.....	.....	.....	.....	.....	.....	20,000	.....
Brazeau-Athabaska	66	133	.....	.....	34	28,100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS	1,039	5,373	900,122	40,042	38,843	9,881	1,006,438	5,594	43,445	940	2	8,765	96,100	365	20,000	60

The utilization of grazing resources within the forest reserves continued on a satisfactory basis. In the Crowsnest division of the Rocky Mountains forest reserve and in the Cypress Hills forest reserve grazing utilization has reached a point close to the maximum carrying capacity of the range. From the Sheep River valley north grazing utilization is not intensive excepting in certain accessible districts. Utilization will not reach the maximum possible until market conditions give rise to larger and more herds. Along the foothill and mountain country there is a gradual extension to the north of grazing operations which is an encouraging development.

The year under review was exceptionally dry with the result that over the southern ranges forage was not as plentiful as in previous years. Stock was removed from forest range at the end of the grazing season in good condition for finishing or wintering. In a season such as the past one the importance of this forest range and its regulated use were evident and gave a further indication of the extreme value of forest protection when the results of such protection are considered in terms of water supply, forage growth and ground cover.

#### GRAZING WITHIN ALBERTA FORESTS—GRAZING YEAR 1933

Forest	No. of Permits	No. of Horses	No. of Cattle	No. of Sheep
Cypress Hills .....	69	331	2,712	.....
Crowsnest-Bow River .....	251	1,930	17,426	6,705
Clearwater .....	82	252	20	.....
Brazeau-Athabaska .....	91	672	72	.....
TOTALS.....	493	3,185	20,230	6,705

#### COMPARISON OF GRAZING

Grazing years:	1931	1932	1933
Number of permits .....	456	606	493
Number of cattle .....	15,041	20,086	20,230
Number of horses .....	3,417	3,377	3,185
Number of sheep .....	4,379	7,465	6,705

Where possible the field staff within the forest reserves assisted the Game Branch of the Department of Agriculture in game enforcement matters and a similar form of co-operation was extended to the Fisheries Division of the Department of Lands and Mines. It is possible to provide this co-operation as forest protection work requires that the field staff makes contact with all forest visitors and travellers. In addition the field staff within the Rocky Mountains forest reserve continued to provide active assistance in the distribution of fish fry within the reserve. This assistance took the form of providing pack horses for transportation together with a certain amount of transportation by truck and speeder, and packing and assisting with the actual distribution of fry as has been provided for many years. In all of this, improvements within the forest such as roads, trails and telephone lines are necessary to accomplish the work.

The various improvements totalling a large mileage of roads, trails, telephone lines and a number of buildings, corrals, fences, etc., require continuous attention in order that each project may be maintained in a usable condition. This maintenance work is undertaken by the regular field staff and requires all the time that can be spared from protection and administration work. As a matter of fact with the restricted period of employment effective for that part of the staff once employed permanently, the maintenance of improvements is in many instances not receiving the attention it should and, in the case of roads, trails and telephone lines, later in the season than is safe.

Very little new construction work has been attempted and only that which has been urgent and could be dealt with by the regular staff without an expensive outlay for material. The most important work and most expensive, had it been done under ordinary circumstances, is that dealt with through the use of workers on relief.

In the Crowsnest-Bow River forest the relief camp working on the Red Deer road was removed from that project on completion of a passable road and work was started on the Gap road which leads to the Gap ranger station. This project had in view the relocation of a section of road east of Racehorse creek that was subject to flooding and washout, and the replacement of the Racehorse creek bridge.

In the Clearwater forest work was continued on the road leading up the Saskatchewan valley west of Nordegg. This road is to connect with the Jasper-Lake Louise road at its western terminus.

The progress on both forests may be accepted as satisfactory when consideration is given to weather conditions obtaining during the winter, the fluctuation of labour supply during the summer and the loss of time in moving camp from the Red Deer district to the Gap on the Livingstone river and the removal of the Saskatchewan river camps to road work east of Nordegg during the summer.

#### WORK DONE BY UNEMPLOYMENT RELIEF CAMPS

##### Crowsnest Forest:

- Clearing (to width of 66 ft.)—1.5 miles.
- Grading—2 miles (including 1 mile of heavy side-hill cuts).
- Gravelling—1 mile.
- Culverts—4.
- Breakwaters—Two were built of rocks and logs; one being 310 ft. long by 10 ft. high and the other 150 ft. long by 8 ft. high.
- Bridges—1 bridge 4-span, 160 ft. long.
- Rock moved—Approximately 4,925 cu. yds. of rock moved.
- Dirt moved—Approximately 16,400 cu. yds. of dirt moved.

##### Clearwater Forest:

- Clearing (to width of 66 ft.)—4.7 miles.
- Grading—11 miles.
- Guard-rail—2,460 ft.
- Side-hill fills and cuts—2.4 miles.
- Culverts—74.
- Bridges—8 bridges built; total length, approximately 330 ft.; a total of 14 spans.

IMPROVEMENT STATEMENT

NEW CONSTRUCTION PROJECTS:

Forest	Garages, etc.	Barns	Fences	Root Cellars	Cabins	Ranger Station Houses	Trails (Miles)	Water Systems	Forest Signs	Cultivated Land (acres)
Cypress Hills	2	3	1	1	...	...	...	...	...	...
Crownest	1	2	1	...	1	1	...	...	...	...
Bow River	1	...	...	...	2	1	13	...	...	...
Clearwater	...	...	2	...	...	...	10	1	1	...
Brazeau	...	...	3	...	...	...	...	1	...	...
Athabaska	...	...	...	...	1	...	...	...	...	5 1/2
TOTALS	4	5	7	1	4	2	23	2	1	5 1/2

MAINTENANCE PROJECTS:

Forest	Ranger Station Houses	Telephone Lines (miles)	Fire Guards (miles)	Roads (miles)	Water Systems	No. of Fences	Grounds	Cabins	Garages, etc.	Trails (miles)	Bridges	Barns	Corrals	Gateways	Hay Meadows	Pastures	Store-houses	Ferries
Cypress Hills	1	12	27	1/2	1	1	1	...	...	150 3/4	1	...	...	...	...	...	...	...
Crownest	3	138	...	52 1/2	11	4	5	2	2	568	...	3	5	1	2	1	...	...
Bow River	2	223 1/2	...	59 1/2	3	18	...	4	4	...	...	2	2	1	...	...	...	...
Clearwater	1	175	...	24	1	5	...	2	2	850	...	...	1	...	...	...	2	1
Brazeau	5	117	...	...	1	8	6	8	5	227	...	3	...	...	...	...	...	...
Athabaska	1	64	...	2	1	4	2	5	2	425	2	...	...	...	...	...	...	...
TOTALS	13	729 1/2	27	138 1/2	7	47	18	21	11	2240 3/4	3	8	6	1	2	1	2	1

## IMPROVEMENTS—STATEMENT OF MAN-DAYS WORKED

## NEW CONSTRUCTION:

Forest	Sheds, Garages, etc.	Fences	Barns	Root Cellars	Cabins	Ranger Station Houses	Trails	Water Supply	Signs	Clearing Land
Cypress Hills .....	26	6	8	7	...	...	...	...	...	...
Crowsnest .....	25	4	9	...	38	28	...	...	...	...
Bow River .....	12	...	...	...	41	2	4	...	...	...
Clearwater .....	...	14	...	...	...	...	5	11½	2½	...
Brazzau .....	...	22	...	...	4	...	...	6	...	61½
Athabaska .....	...	...	...	...	...	...	...	...	...	...
TOTALS .....	63	46	17	7	83	30	9	17½	2½	61½

## MAINTENANCE:

Forest	Ranger Station Houses	Telephone Lines	Fire Guards	Roads	Water Systems	Fences	Grounds	Sheds, Garages, etc.	Cabins	Trails	Bridges	Barns	Corrals	Gateways	Hay Meadows	Pasture	Store- houses	Fertiles
Cypress Hills .....	42½	14	6	3½	1½	4	2	...	2	106	14	...	...	...	...	...	...	...
Crowsnest .....	9	248	...	78	...	49	42	2	11	212	...	...	...	...	...	...	...	...
Bow River .....	12	315	...	132	6	117	10	5	7	406	...	5	24	2	10	1	3	14½
Clearwater .....	3	56	...	11	2	39	...	...	35½	138	...	1	13	...	...	...	...	...
Brazzau .....	32½	112	...	...	2	102	50½	4	6	148½	6	15	...	...	...	...	...	...
Athabaska .....	4	58½	...	6	9	79	36½	1	...	...	...	...	...	...	...	...	...	...
TOTALS .....	103	803½	6	230½	20½	390	141	12	61½	1010½	20	21	39	2	10	1	3	14½

Staff strength on the forest reserves was not increased during the year nor was the period of employment changed.

The existing arrangement has led to certain difficulties of administration. Maintenance of improvements and the safety of equipment is giving some concern. This is due to lack of coverage for many districts during the winter which leads to infringement of the regulations and with many ranger districts and buildings vacated, it follows that maintenance of improvements must await the re-employment of the seasonal staff, and that fire-fighting and other equipment is at the mercy of those inclined to steal such articles.

There is also a serious lack of field supervision of staff and of work in the southern part of the Rocky Mountains forest reserve and this should be corrected just as soon as possible.

The administration of The Prairie Fire Act and the regulations for the prevention of prairie and forest fires has a close connection with forest protection, being the basic legislation providing for protection work over all areas outside of the forest reserves. It is, therefore, unnecessary to again refer to the matter here in so far as it affects forest protection other than to point out that this legislation contains certain obsolete and unsatisfactory provisions which should be replaced.

#### STATEMENT OF REVENUE—FOREST RESERVES

(April 1st, 1933, to March 31st, 1934.)

Timber permits .....	\$ 8,834.06
Timber seizures .....	43.53
Timber sales .....	13,556.44
Timber sale applications and guarantee deposits .....	2,325.00
Grazing permits .....	13,033.83
Hay permits .....	207.91
Fishing permits .....	918.00
Surface rentals .....	2,308.85
Miscellaneous use permits .....	947.23
Sundry revenue .....	1,268.96
<b>TOTAL .....</b>	<b>\$43,443.81</b>

#### *Northern Alberta Forest District.*

The administration of the forest resources of all forested provincial and school lands within the Province and not included within the forest reserves was continued on lines similar to those of the preceding year. Whilst the tendency of recent years for the larger operators to curtail or discontinue work was again very marked, there was a decided increase in the number of smaller operations and also in the total amount of lumber and other products manufactured in connection with these. During the year no less than 71 new permits timber berths were sold compared with 41 during the preceding year.

This tendency towards reduced production on the larger operations and increased production on the smaller ones is well exemplified by the figures showing lumber manufactured on the various classes of operations. Whilst lumber manufactured on licensed berths during the year aggregated 29,047,673 f.b.m., a decrease of approximately 24%, lumber from timber berths reached a total of 15,912,096 f.b.m., an increase of more than 100% over the corresponding figures for the preceding year. The production of lumber and of railway ties also shows a considerable increase over the previous year on operations conducted under settler's and other timber permits.

The total production of all classes of material from timber berths in the Province showed a slight decrease in comparison with last year excepting in the cases of mine timber in which there was a substantial increase and of railway ties in which production increased by nearly 360%. The latter increase was largely due to the fact that in recent years the railway companies had cut down their purchases of ties until a point was reached where considerably heavier purchasing was necessitated in order to make proper maintenance of rights of way possible.

A comparison of timber products manufactured during the year from all sources on provincial and school lands within the Province, including operations on berths and under authority of settlers' and other permits, show a slight increase in the quantity of lumber manufactured over the previous year, in spite of the curtailment of the larger operations. An increase of well over 100% is shown in the number of railway ties manufactured.

Although a number of the larger mills did not operate during the year, the total number of saw-mills operating showed a substantial increase, most of the new mills being of a comparatively small capacity. Revenue from timber operations is still at a comparatively low level, but on the whole, collections during the year compare fairly well with those for the preceding year.

Although the manufacture of railway ties showed a considerable increase, all other timber operations remained at the depressed level of production of recent years. This condition is, of course, consequent to the general economic depression which has reduced all construction activities and with them the demand for lumber and other timber products. An increased lumber export from British Columbia during the year has had the unfavourable effect in Alberta of throwing increased supplies of the poorer grades of British Columbia lumber, which are unsuitable for export, on the already depressed lumber markets of the prairies.

Certain legislation was effected during the year for the purpose of reducing the burden of timber operators who had continued to operate after the economic depression had seriously reduced the market prices of lumber products, and for the purpose of utilizing timber in small isolated stands. In January, 1934, orders in council were assented to which authorized a rebate of 50c per thousand f.b.m. on timber cut, manufactured or sold from timber berths in the Province and from timber sales in the provincial forest reserves between October 1st, 1931, and September 30th, 1933, except in the case of fire-killed timber berths on which the rebate was to be at the rate of 25c per thousand. This rebate was applied in the form of a credit to each account concerned and was based in each case upon the cut, manufacture, or sale of lumber during the period concerned, whichever proved to be the greater, so as to give the operator in each case the maximum rebate as authorized. As already stated this legislation was designed to lighten the burden of those operators who had continued to operate in spite of the handicap of a badly depressed market, thus providing much needed employment for a considerable number of men.

The timber regulations were amended under date of December 12th, 1933, one of the most important amendments authorizing the issue of special permits to cut timber from isolated tracts not over 160 acres in area and containing not more than 125,000 f.b.m. Another amendment at that time increased the settler's free allowance of fuel wood, in cases where the same was to be cut from dead or fire-killed timber, from 15 to 25 cords per annum.

Certain amendments to the schedule of rates of dues payable on materials cut under timber permit from provincial and school lands are being planned, which will have the effect of reducing such dues on certain classes of material and also of bringing such dues in line with those charged on provincial forest reserves, these changes no doubt to be effected before the publication of this report.

Amongst other amendments to The Provincial Lands Act assented to on April 11th, 1933, was one dispensing with the newspaper advertising of the sale of timber permit berths. Notices of sale are now displayed in local post offices and mailed to the applicant for the berth, and any other interested parties, the effect being to save considerable expense and time.



## STATEMENT OF TIMBER OPERATIONS ON PROVINCIAL AND SCHOOL LANDS

April 1st, 1933, to March 31st, 1934.

	Licensed Timber Berths	Permit Timber Berths	School Lands Timber Berths	Provincial Lands Timber Permits	School Lands Timber Permits
Number of active operations....	34	124	11	2,894	344
Lumber (ft. B.M.) .....	29,047,673	15,912,096	290,551	10,805,025	98,050
Railway Ties .....	105,903	644,239	20,493	119,327	1,637
Piling (lin. ft.) .....		18,850		14,761	
Mine Timber (lin. ft.) .....	134,988	28,631		150,570	
Lath .....	2,476,570	583,356			
Telegraph and Telephone Poles .....				802	600
Building Logs (lin. ft.) .....		2,904		348,188	5,972
Fence Rails .....				1,588,089	1,610
Roof Poles .....				316,453	275
Fence Posts .....		100		362,591	580
Shingles .....		436,000		77,000	
Shingle Bolts (cords) .....		13		69	6
Cordwood (cords) .....		439		8,512	400

Number of Inspection Reports submitted by Timber Inspectors ..... 1,968

Number of Timber Seizures made: 177 on Provincial Lands

15 on School Lands

192

In connection with the above statement it should be pointed out that this does not give a complete record of timber operations during the fiscal year, as many of the permits issued during the year have not, at the date of compiling this statement, been returned showing material obtained. Similarly many of the timber berth quarterly returns were not received in time for the material shown thereon to be included in the summary. Figures shown in this statement for material manufactured on timber berths will not agree with the totals of the figures shown in the Edmonton and Calgary Crown Timber Agents' reports for the reason that the figures in those reports were compiled at a somewhat earlier date than the above statement, which for that reason includes quarterly returns which had not been received when they were compiled.

The increase in number of timber operations on the smaller scale, which has already been referred to, has very considerably increased the inspection and supervision work required of the timber inspectors. In addition to this, arrangements were made during the summer of 1933 whereby the timber inspectors acted as sub-agents of provincial lands on certain specified days each month at one or more points in their districts. The following table summarizes the work covered by the various inspectors from October 1st, 1933, to March 31st, 1934, in the course of their duties as sub-agents of provincial lands:

SUMMARY OF SUB-AGENCY DUTIES PERFORMED BY TIMBER INSPECTORS  
From October 1, 1933 to March 31, 1934

Inspection Districts	Points at which Sub-Agency Duties Performed	Entries		Reservation for Minors	Improvements	Statutory Declarations	Abandonments	Cancellations	Applications for				Miscellaneous	Total Transactions	Revenue Collected
		Homestead	S. Grant						Grazing Leases and Permits	Hay Permits	Timber Permits	Patent			
Edmonton	Breton	5	...	...	2	3	3	8	...	...	4	1	...	26	\$ 82.25
Edson	Edson	26	...	1	...	4	2	15	...	1	9	5	...	69	540.00
Athabasca	Barthhead	49	...	1	1	2	6	23	...	...	33	4	6	125	618.00
Bonnyville	Athabasca	63	...	...	5	3	8	71	7	...	24	6	8	195	1,171.97
Slave Lake	Bonnyville	7	...	...	...	...	...	...	1	...	...	...	...	15	95.40
Peace River	Slave Lake	35	...	...	2	7	6	20	...	2	7	110	9	198	458.00
	McLennan	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Fairview	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Grande Prairie	Spirit River	25	...	4	3	22	8	25	...	1	27	27	9	151	425.90
	Debolt	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS		210	...	6	13	41	33	169	9	4	104	153	37	779	\$3,391.52

The transaction of sub-agency business by the timber inspectors has necessitated the devotion of considerable time in this connection and has, in some cases, seriously interfered with the timber inspection work, particularly since it being necessary for the inspector to act as sub-agent at definite points on certain stated days, he must on occasion leave inspection work in some other locality unfinished in order to reach the point at which he was to act as sub-agent on the date specified.

In spite of having devoted considerable time during the last six months of the year to sub-agency duties, the timber inspection work actually accomplished during the year shows a considerable increase over the preceding year, 1,968 inspection reports having been submitted as compared with 1,476 in 1932-33.

In some districts a stage has been reached whereby, with all the other duties now being performed by the field men, the burden is becoming too heavy for them, and further assistance is needed to enable the present efficiency to be maintained.

The following statement shows the miles that were travelled and means of travel used by timber inspectors in the course of their duties during the year:

On foot .....	1,771 miles
On horseback .....	1,152 "
Driving (team) .....	4,042 "
By railway speeder ..	3,919 "
By automobile .....	72,129 "
By canoe .....	200 "
By raft .....	14 "
By motorboat .....	737 "
By railway .....	14,914 "
<b>TOTAL .....</b>	<b>98,878 miles</b>

From the middle of December until the end of the fiscal year road conditions made it impossible for inspectors to use automobiles in the Peace River, Grande Prairie and Bonnyville districts.

The greatly increased number of timber inspection reports submitted is only one indication of the increased efficiency of the timber inspection and supervision work performed. In so far as the greatly increased demands upon their time admit, as close a check as possible has been made of brush disposal, close utilization, and trespass and illegal operations. The chief difficulty, as already stated, can be overcome only by increasing the inspection staff, as the timber inspection work in their present large districts together with that of fire protection and also certain additional sub-agency duties now in effect have in some cases already exceeded the capacity of any one man.

For this reason little progress has so far been possible in the timber reconnaissance work which it is of great importance to undertake in order that stock may be taken of the timber resources of Alberta with a view to conserving the immature and disposing of the mature timber to the best advantage of the operator and of the Province.

#### NURSERY AND TREE DISTRIBUTION

##### *Nursery.*

The really active spring period of nursery work and tree distribution overlaps the end of the fiscal year. In order to provide a complete report on the work accomplished, it becomes necessary to report fully on the work carried on in the spring period without cutting off at the end of the fiscal year.

A continuation of the nursery work recently initiated at Oliver has been under way and this has led to nursery expansion. While Oliver is an ideal place for nursery development, it was foreseen that such development would be somewhat limited for the reason that the labour supply available at the Oliver Institution is not wholly satisfactory and is limited in ability to cope with large

scale nursery operation. Accordingly arrangements were made to begin nursery operations at other suitable government institutions and a definite start was made at the Ponoka Mental Hospital, the Fort Saskatchewan jail and the Lethbridge jail where a large number of seedlings were set out in transplant beds.

The following seedlings from Oliver were moved and placed in transplant beds at the locations indicated:

Ponoka Mental Hospital—35,000 lodgepole pine.  
 Fort Saskatchewan Jail—75,000 lodgepole pine.  
 Lethbridge Jail—18,000 lodgepole pine, 31,000 Scotch pine.

The tree stock moved to the Lethbridge jail has not been placed in the area set aside for nursery purposes for the reason that suitable wind-breaks must be developed. The stock was transplanted into the garden grounds. An area of 9½ acres, triangular in shape and with provision for irrigation, has been set aside for nursery purposes at Lethbridge. Roadways have been laid out and tree stock for the purpose of developing suitable wind-breaks around and through the area has been planted.

At the Oliver nursery the following seedling stock was transplanted:

Lodgepole pine .....	168,000
Jackpine .....	28,000
Scotch pine .....	22,000

Of the above amount 28,000 jackpine and 7,000 lodgepole pine were moved to the transplant bed in the fall of 1933. Due to high winds and lack of snow there has been considerable damage to this lot by cutting from drifting soil. There was also the moving of a considerable number of elm, larch, poplar and burr oak.

Following the removal of seedlings to transplant bed, the seed beds were prepared for planting and three additional seed beds 70 feet long prepared. The beds are uniformly four feet wide. The following species, in varying quantities, are now in them: white spruce, lodgepole pine, red pine, Scotch pine, Scotch (Ladoga) pine, white pine, Douglas fir, Siberian larch, silver maple, white elm. Experimental work with other species is also being done on a small scale.

With the assistance of local single unemployed men, two-year old Russian poplars were planted twenty-five feet apart on both sides of the highway between the Edmonton city limits and Oliver.

The officials of three schools which are situated along main highways were offered assistance in the planting of trees and shrubs for the purpose of building up a model lay-out from which other schools could pattern. Only two of the schools, East Edmonton and Clover Bar, were willing to co-operate. At one school Russian poplars were planted, and at the other caragana, Russian poplar and spruce were put in. It is hoped to do further planting at these schools next year.

On the site of the forestry cabin at the exhibition grounds in Edmonton there is a small model nursery and a model farm shelter-belt. The stock from the seed-beds was removed, and after the ground was thoroughly dug up and worked, seeds of mountain ash, red oak, and white elm were planted in the beds. The shelter-belt was thinned and cultivated.

#### COST OF NURSERIES APRIL 1st TO DEC. 31st, 1933

(Supervision costs not included)

Material .....	\$139.29
Wages .....	190.00
Seed .....	45.99
Freight and cartage .....	45.61
<b>TOTAL.....</b>	<b>\$420.89</b>



Mature spruce on the trail from Mountain Park to the Brazeau River

*Distribution.*

A total of 257 applications was received up to the closing date for 1934 from all parts of the Province. Of this number, it was necessary to reject 29 because the trees were required for purposes not covered in the policy of distribution.

The orders accepted were made up as follows:

Individuals (farmers) .....	183
Schools .....	18
Institutions (non-commercial) .....	13
Towns, municipalities, parks, cemeteries and community grounds .....	14
<b>TOTAL</b> .....	<b>228</b>

The 228 orders for trees were shipped to 114 different points in all parts of the Province from Magrath, in the south, to Grande Prairie in the north.

The total number of trees distributed was 34,339 made up of the following species:

White spruce .....	21,128
Siberian larch .....	1,593
Green ash .....	5,120
Lodgepole pine .....	1,865
White elm .....	1,295
Russian poplar .....	3,030
Burr oak .....	223
Jack pine .....	85
<b>TOTAL .....</b>	<b>34,339</b>

This number is a large increase over last year's distribution which amounted to only 8,095 trees. In addition to that number there were shipped last year about 700,000 caragana plants. This policy has been discontinued and replaced by the distribution of caragana seed by the Provincial Department of Agriculture.

#### COST OF TREE DISTRIBUTION, 1934

(Supervision costs not included)

Material .....	\$106.61
Freight and cartage .....	25.33
<b>TOTAL .....</b>	<b>\$131.94</b>

The stock available for distribution in the spring of 1935 is limited to two species of which the following quantities are available:

White spruce .....	110,000
Green ash .....	8,400

The stock of all other species is either of such small quantity as to make general distribution impossible or it is as yet too small for planting out.

It is suggested that a certain amount of publicity and education is needed to impress upon farmers in the Province the necessity of planting trees and establishing caragana hedges. With a large store of caragana seed at the disposal of the Department of Agriculture it is regrettable that the applications for seed have been rather few in number. It is thought that if the policy of shipping caragana plants had been continued, it would have grown to such an extent that millions of plants would be shipped out every year. Yet in spite of the fact that caragana can be grown from seed in the garden along with the vegetables, and takes just the same treatment, the demand for such seed is very limited. No doubt a little educational work along this line would be of assistance.

#### PUBLICITY

The most important aim of the publicity used by the Forest Service is to educate the public in regard to the importance of forest cover and to be careful with fire, since human carelessness is the principal cause of forest fires.

The interest of school children is aroused by the distribution of certain publicity material principally to those schools in or near forested areas. Field officers also give occasional lectures to the school classes.

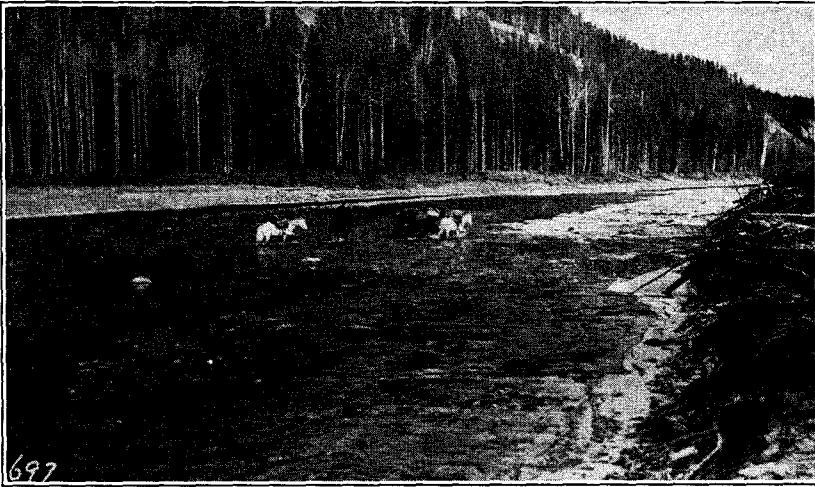
The adult public is reached in several ways. In periods of great fire danger, articles are published in the press warning the people of the need for care with matches, camp fires and tobacco. Forestry cabins located on the exhibition grounds at Edmonton and at Calgary were used for the purpose of housing exhibits of forest products and illustrating the need for and importance of forest cover but were not fully utilized. The Calgary cabin was not opened in 1933 due to unfavourable fire conditions on the Crowsnest-Bow River forest and consequent shortage of staff.

For persons who are travelling in the woods, warning posters are put up by forest officers in conspicuous places. Personal contact, although necessarily

limited except within the forest reserves, is also relied upon by the protection staff to obtain the co-operation of those using the forests.

#### PUBLIC RELATIONS

The contact between officers of the Alberta Forest Service and the public has been maintained on a satisfactory basis. Whether it be a matter of forest administration or forest protection, the effort is to help the individual in any way possible. In dealing with infringement of the regulations it becomes necessary to take a definite stand but the effort on the part of the forest officers is first to instruct in order that infringements may be prevented as far as possible.



Rangers fording Sheep Creek in the Clearwater Forest

#### MILEAGE TRAVELLED BY PERSONNEL OF THE ALBERTA FOREST SERVICE

Fiscal Year 1933-34

Method of Travel	Cypress Hills Forest	Crowsnest- Bow River Forest	Clearwater Forest	Brazeau- Athabaska Forest	N.A.F.D.	Totals
Foot .....		4,289	1,632	3,089	16,839	25,849
Saddle .....	1,909	42,252	12,551	17,172	43,896	117,780
Driving .....		2,742	398		11,133	14,273
Speeder .....			1,841	6,760	17,432	26,033
Auto .....	105	27,962	10,955	2,114	80,915	122,051
Canoe .....					7,797	7,797
Rowboat .....					22	22
Raft .....					507	507
Motorboat .....					5,368	5,368
Aeroplane .....					25	25
Railway .....			1,158	3,422	13,270	17,850
TOTALS .....	2,014	77,245	28,535	32,557	197,204	337,555

## Fisheries

### REPORT OF THE DIRECTOR OF FISHERIES, R. T. RODD

Market conditions were decidedly better during the fiscal year under review, reflecting in gains both to the fisherman for his product and to the companies operating.

Most lakes prospered on a capacity basis and with a strong market evident through most of the year, products from different parts of the Province were disposed of profitably. Arrangements were made wherever possible to accommodate fishermen and selling agencies with changes in the regulations, when desired, so as to meet market conditions. This concession was thoroughly appreciated by the trade and resulted in a desire on the part of the fisherman to co-operate with the Department in the enforcement of regulations.

Usual drought conditions prevailed in the mountain streams of southern Alberta and occasioned some concern for the welfare of species of the game variety, but wherever possible officers employed were able to rescue fish which were stranded by lack of water. Trout fishing continued to improve and reports of larger size fish and bigger creels were continually received.

Coarse fish angling showed a slight decrease due partly to lower waters in some of the lakes, causing the fish to change their feeding grounds, and partly to an over-abundance of natural food, making artificial bait much less attractive. Due to a severe winter, with the consequent heavy ice and inability of anglers to get to their favourite spots, very little angling through the ice was undertaken, naturally contributing materially to this decrease.

#### COMMERCIAL FISHING

Commercial fishing for the period covered by this report amounted to a total of 3,566,356 pounds, an increase of 911,142 pounds over the preceding year. The value to fishermen showed an increase of \$36,684.70 and the value as marketed an increase of \$69,946.73. Prices reached a high average, rising noticeably during the month of March, 1934, and reports of depleted stocks held in cold storage assisted in the sale of freshly caught fish. Some new equipment was purchased and fishermen generally operated their yardage capacity. Operations at Wabamun and Pigeon lakes were exceptionally good. Both being in excellent condition, the limit of 185,000 pounds of whitefish for the former was exceeded by 29,583 pounds, the value to fishermen exceeded the value of the catch for 1932-33 by \$5,685.08. Fishing at Pigeon Lake totalled 189,835 pounds of whitefish, which is a decrease of 25,072 pounds from the previous season's catch when additional fishing was permitted, but an increase is shown in the value to fishermen of \$666.02 with the same number of men operating.

At Lesser Slave Lake the pickerel fishing was exceptional and good prices were obtained during the month of March. Whitefish fishing was fair with continued signs of improvement. Indications show that the intensive restocking policies undertaken in previous years will assist greatly in the recovery of this lake. A large increase is reported from fishing at Lesser Slave with a larger number of fishermen operating. The total amount of fish of all species taken amounted to 1,397,311, an increase of 504,503 pounds, and an increase in value to fishermen of \$18,611.20.

Lac La Biche with nearly three times as many fishermen operating shows an increase of 304,646 pounds, and an increase in value to fishermen of \$6,076.78.



The number of fishermen operating numbered 83 as against 31 for the year previous. Difficulties arising in the disposal of the large quantities of tullibee caught during the winter were overcome largely by the number of peddlers purchasing fish at this lake. This class of fish is generally disposed of in smaller towns and to farmers at low prices.

The greater part of the catch from the Whitefish lakes in the Lesser Slave Lake district is caught and sold in a frozen condition owing to the distance to steel. Average conditions prevailed excepting only that the value to fishermen was slightly less than in the previous fiscal year. There was an increase of some 5,000 pounds in the catch with an increase of 6 fishermen.

The winter catch at Cold Lake showed an increase in the catch of trout of 14,730 pounds and a slight decrease in the catch of whitefish. During the fiscal year 1932-1933 the number of licenses issued was 61, and during the year under review only 45 men operated with a better average catch per fisherman reported. Value to fishermen increased by \$1,263.44.

Primrose Lake, which is intersected by the provincial boundary line, is but lightly fished on the Alberta side, the Saskatchewan portion offering the better fishing grounds. No fishing was reported on the Alberta side during the previous year, but, during the season 1933-34, 4 men operated and 7,350 pounds of whitefish were caught. Fishing was but fair.

Fishing at Lake Winnifred north of Lac La Biche furnished 12 men with reasonably good returns in view of the fact that this lake was considered to be badly depleted. The showing from this lake of 30,000 pounds of whitefish caught in a very short time amply proves the quick recoveries of Alberta lakes from overfishing, when these lakes are lightly fished, or not fished at all for a few years. This particular lake has only been lightly fished since its heavy production in 1927-28.

Fishing was also carried on for the first time in three years at Lac St. Anne and 49,651 pounds, practically the limit of 50,000 pounds, were shipped by the 10 commercial fishermen operating. The average price received ranged around five cents per pound to the fishermen. As Lac Ste. Anne has been closed for two years to enable the whitefish to recover, this catch, which averaged over 5,000 pounds per person, was considered to be most satisfactory.

Other lakes commercially popular, though on a smaller basis, varied but little in either the number of fishermen operating or in production. The most important of these are Baptiste, Sturgeon, Pinehurst, Gregoire, Elinor, Isle, Christena, Beaver, McGregor, Newell, Fawcett, Buck and Moose lakes fished both summer and winter, and Lylich, Bourque, Marie, Touchwood and Helena lakes during the winter only. Trout and Wabasca lakes were unfished during the year under review.

#### *Equipment.*

Somewhat better equipped fishermen engaged in fishing and the operating companies generally speaking were more liberal with credit, due in a large measure to the better markets and keener competition among the buyers. Some old boats were reconditioned and a happier general situation prevailed throughout. Most fishermen realized a clear profit for the first time in three years.

#### *Markets.*

Prices for the latter part of the summer season and at the end of March during the Jewish festival were good and higher prices obtained through the other seasons. The Department continued its campaign of urging a more careful handling of fish and of shipping the standard which can be most easily absorbed, care to be taken in the use of clean boxes of properly dressed fish,

carefully packed and iced, which would result in a greater demand for the Alberta product. With a larger number of fishermen operating, abuses creep in, but generally speaking the average fisherman is gradually being educated to the fact that with proper attention to standard of product and method of distribution markets will react accordingly. Competition from eastern points, always of course the most important and vital factor, was slightly keener than in the previous year. This was mostly due to the absorption of all frozen and cold storage stocks and with a larger demand for fresh water fish, the Alberta product was more easily disposed of. Care was again taken in the production of fish only when the markets were sound and the demand keen. Local markets had at times some difficulty in obtaining their requirements because of the demand from the United States. The products of Alberta fisheries were as a whole more highly priced than for some two years previously.

#### *Transportation.*

Due to the comparatively mild winter and deep snows a number of the more distant lakes were inaccessible. To reach some of them the winter trails across swamps and muskegs and as these had been prevented from freezing by the heavy snowfall early in the season the trails became impassable. Many pedlars, usually an important factor in the local supply, were unable to use their trucks, but railway facilities were good. Air service was used very little during the year, the only fish so transported to the railway being those caught in Saskatchewan waters which were brought to the steel at Conklin. Main roads, generally speaking, were good and little discomfort was occasioned either from Pigeon or Wabamun in bringing fish in fresh condition to shipping points.

#### *Domestic Fishing.*

Whilst there was an increase of 50 licenses shown there was a decrease in the poundage caught of 46,750 pounds. This class of fishing becomes more popular yearly. Many residents, especially farmers, will travel long distances to take advantage of this way of obtaining their supply of fish which is generally secured in a few days. Others living close to lakes set their nets only as fresh fish was desired. Accurate returns of catches to this Department are difficult to obtain, and can only be estimated, owing to the licensee usually having no method of weighing the fish. The estimated amount of the catch taken during the year under domestic licenses was 411,250 pounds. Chin Lakes in southern Alberta provide many farmers in the irrigated district with excellent whitefish. The Department's policy of permitting only domestic licenses in the smaller, easily fished lakes continued to be popular. Fishing on a domestic basis is provided for in the following lakes: Chin, Newell, Pigeon, Whitefish lakes north of Smoky Lake, Wabamun, Lac Ste. Anne, Lac La Nonne, Buck and Buffalo, all situated in well settled farming districts. The decrease in poundage is possibly due to the close check kept on those who in the past were inclined to take more fish than required and dispose of the surplus unlawfully.

#### *Indian Fishing.*

The records show another increase over the previous season both in poundage and the number of Indians fishing, the increase in poundage being 87,635 and the increase in permits issued, 50. The estimated amount of fish taken by Indians during this year was 947,635 pounds of all kinds.

TOTAL AMOUNT OF FISH TAKEN FOR COMMERCIAL PURPOSES—IN ORDER OF IMPORTANCE

	Weight, lbs.	Value to Fishermen	Value as Marketed
WHITEFISH .....	May 16/33 to Sept. 30/33.....	\$ 22,036.53	\$ 37,697.18
	Dec. 1/33 to Dec. 31/33.....	9,893.05	18,064.64
	Jan. 1/34 to March 31/34.....	41,625.30	51,342.00
	1,487,056	\$ 73,554.88	\$107,103.82
LAKE TROUT .....	May 16/33 to Sept. 30/33.....	\$ 646.60	\$ 1,544.40
	Dec. 1/33 to Dec. 31/33.....	613.17	688.47
	Jan. 1/34 to March 31/34.....	13,461	1,259.77
	38,871	1,259.77	2,232.87
PIKE .....	May 16/33 to Sept. 30/33.....	2,793.09	3,314.15
	Dec. 1/33 to Dec. 31/33.....	2,928.97	4,879.55
	Jan. 1/34 to March 31/34.....	8,652.62	11,588.54
	688,157	14,374.68	19,782.24
PICKEREL .....	May 16/33 to Sept. 30/33.....	13,281.03	28,465.31
	Dec. 1/33 to Dec. 31/33.....	4,259.29	8,660.43
	Jan. 1/34 to March 31/34.....	18,570.87	27,402.75
	913,054	36,111.19	64,528.49
TULLIBEE .....	May 16/33 to Sept. 30/33.....	752.15	759.52
	Dec. 1/33 to Dec. 31/33.....	291.95	522.60
	Jan. 1/34 to March 31/34.....	1,098.93	1,702.96
	146,696	2,143.03	2,985.08
PERCH .....	May 16/33 to Sept. 30/33.....	314.11	728.80
	Dec. 1/33 to Dec. 31/33.....	27.00	31.00
	Jan. 1/34 to March 31/34.....	1,054.65	1,054.65
	31,170	1,395.76	1,814.45
SUCKER .....	May 16/33 to Sept. 30/33.....	1,309.83	1,309.83
LING .....	Dec. 1/33 to Dec. 31/33.....	433.30	433.30
GOLDEYE .....	Jan. 1/34 to March 31/34.....	541.91	565.16
MULLET .....	261,352	2,285.04	2,308.29
TOTALS.....	3,566,356	\$131,124.35	\$200,755.24

FISHERIES

*Licenses and Permits.*

As will be seen from the following table, an increase of 27 in the number of licenses and permits issued, appeared for this year. Domestic, fishermen's and commercial licenses and Indian permits show an increase, but angling permits show a decrease, 140 for the Fisheries Division and 81 for the Forestry, as shown below:

Fiscal Year:	*1930-31	1931-32	1932-33	1933-34
Domestic licenses .....	566	555	458	508
Fishermen's and commercial licenses .....	1,033	755	598	746
Angling permits sold by Fisheries Division....	7,731	6,533	4,963	4,823
Angling permits sold by Forestry Division....		566	478	397
Indian permits .....	1,130	736	860	910
<b>TOTALS.....</b>	<b>10,460</b>	<b>9,145</b>	<b>7,357</b>	<b>7,384</b>

\*Six months to March 31.

*Angling.*

Trout fishing continued to improve throughout the year and provided as hitherto the major sport for anglers. In the Red Deer river and its tributaries evidence of the establishment of Loch Leven trout was as noticeable as in the previous year, but the rainbow and cutthroat were the species most popularly sought after. Indication is that fishing for these two varieties has never been better than during the year reviewed. With better economic conditions undoubtedly angling will increase greatly, and heavier stocking will be necessitated. This will be especially required in the Edson district when the Jasper Highway will be completed as an all weather route.

Streams in southern Alberta continue to be a source of worry through drought conditions and much work is performed in the saving of game fish stranded or in danger of being stranded. The destroying of predacious fish in game fish streams and rivers continues to be an important part of the duties of Fisheries officers. An appendix follows on this phase of the Division's work. Good fishing generally prevailed in the Bow, Highwood, Elbow, Old Man, Crowsnest, Willow and Castle rivers and the streams around Edson and grayling were particularly plentiful in the MacLeod River. Fair catches of Loch Leven trout were obtained in some stretches of water stocked with this variety around the Red Deer River and its tributaries. Good fishing was also noticeable in Cold Lake. No results have so far been experienced from the experiment of stocking Wabamun and Pigeon lakes with this variety, although occasional reports have been received that trout have been caught in these waters.

Coarse fish angling was generally good throughout the Province, especially in those lakes created as irrigation projects. Many anglers were seen obtaining good catches at Lac La Nonne, Lac Ste. Anne, Hastings, Mere and other lakes in the vicinity of Edmonton. During the winter a regrettable incident has to be reported in the loss of all fish in Lake Nakamun and Whitewood lake as a result of a severe winter and thick ice and snow. These two lakes, particularly the former, were important from the standpoint of angling. It is to be hoped that with restocking they will again resume their importance as popular resorts to anglers.

## FISH CAUGHT BY ANGLERS

Trout .....	226,000 lbs.	5,362	increase
Rocky Mountain whitefish .....	79,000 "	56,000	decrease
Arctic grayling .....	50,000 "	17,000	decrease
Goldeye .....	7,730 "	3,440	increase
Pickereel .....	150,000 "	27,876	decrease
Perch .....	230,000 "	10,375	increase
Pike .....	746,000 "	112,240	decrease
<b>TOTAL.....</b>	<b>1,488,730 lbs.</b>		

or a decrease of 193,939 lbs. on the year's operations.

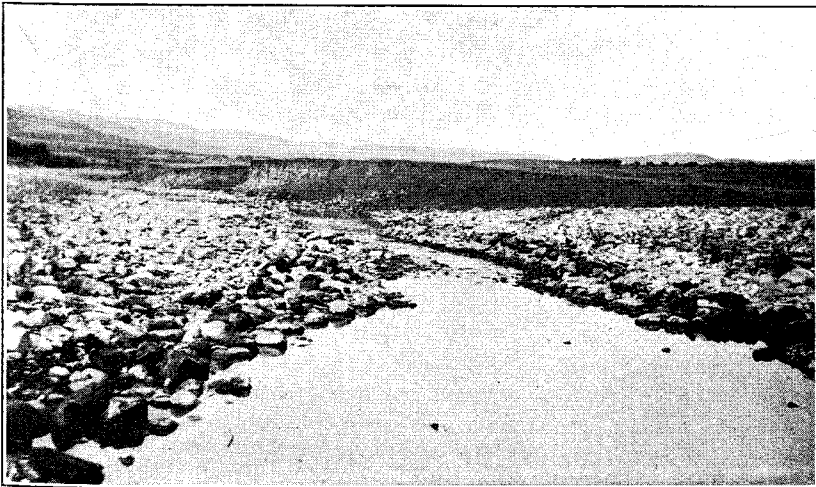
*Loss of Fish—Rescuing Fish.*

Due to the continued drought in the southern part of the Province during the last few seasons many of the smaller streams of the foothills became dangerously low, while others went dry altogether at certain points during the summer months. In some of the larger ones the waters receded, leaving pools or backwaters where fish became landlocked or cut off from the main stream, resulting in the danger of these pools becoming dry or fish being frozen in during the winter. These conditions no doubt caused some loss of game fish but not as great as was first anticipated.

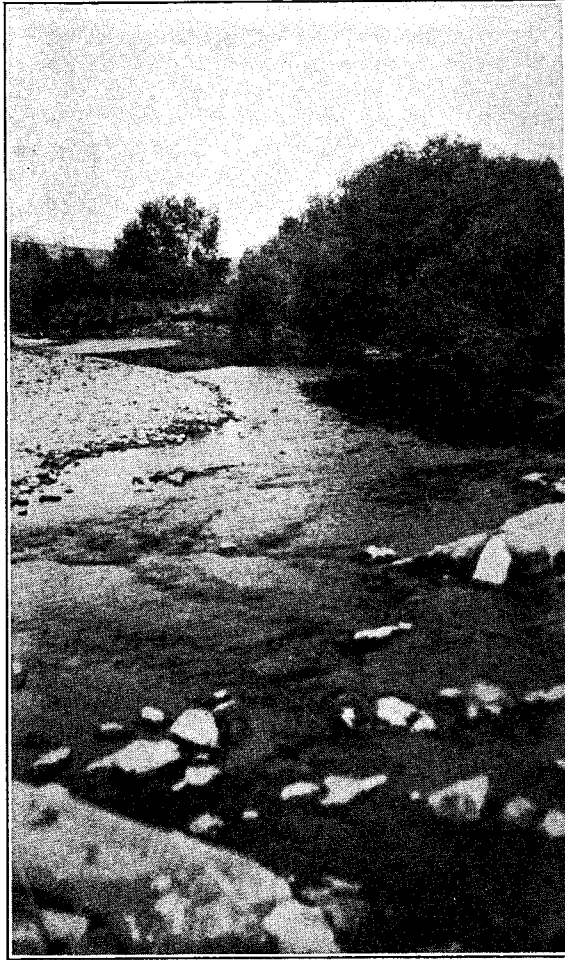
A very close watch was kept on all streams by the inspectors and guardians and, where necessary and possible, the fish cut off or in danger of being lost were rescued and removed to more suitable waters. Were it not for the natural habits or instincts of trout, the loss would no doubt have been much greater and more work would have been necessary to save them.



Willow Creek, tributary of the Old Man River, showing result of drought condition. Fisheries Officer creating channel by moving boulders and rescuing small trout



Willow Creek showing results after boulders moved and channel created



Willow Creek, three miles down stream from previous pictures. Increased waterflow from other tributaries and water reappearing from gravel beds in main creek

Trout in Alberta foothill and mountain streams do not naturally frequent warm waters. If the streams do not become low or dry up too quickly these fish, when finding the waters becoming shallow and warm, will, if at all possible, head up stream towards the source where usually in mountain streams the flow is more uniform and the water colder or they will go down stream seeking greater and colder depths. For this reason the loss has been much smaller than would be expected and the necessity for rescuing fish not nearly so great. Fortunately there were several light rains and snowfalls late in the season which greatly improved conditions for the winter. During the summer season of 1933 the following fish were rescued:

District of Sundre (Guardian Thompson).....	2,729	Rocky Mountain whitefish
District of Bragg Creek (Guardian Fullerton).....	8	trout
District of Willow Creek (Guardian Comrie).....	1,228	"
District of Connelly Creek (Inspector Holmes).....	22	"
	<hr/>	
	3,987	Adult trout and whitefish

*Removal of Predacious and Undesirable Fish From Trout Waters.*

For a number of years this work has been carried on by the various officers as one of their regular duties but no record was kept during this time of the number of this class of fish removed or destroyed. From 1928 to 1932 inclusive the following fish were removed from trout waters:

Suckers, ling .....	67,150
Pike .....	94
Large Dolly Varden trout .....	214
<b>TOTAL .....</b>	<b>67,458</b>

It might be explained that the large Dolly Varden trout, when found in waters frequented by other species of trout, grayling, or Rocky Mountain whitefish, being of a cannibalistic nature, are very destructive and it is considered advisable to remove such fish where possible.

During 1933 the following fish were removed from trout waters:

Sundre district (Guardian Thompson) .....	11,806 sucker and ling
.....	642 pike
.....	47 Dolly Varden trout
Elbow River district (Guardian Fullerton) .....	100,253 sucker
Calgary district (Inspector Richardson) .....	188 pike
.....	4 Dolly Varden trout
Highwood River district (Guardian Smith) .....	684 sucker and ling
.....	10 Dolly Varden trout
Willow Creek district (Guardian Comrie) .....	713 sucker
.....	35 pike
Crowsnest area (Inspector Holmes) .....	164 sucker
<b>TOTAL .....</b>	<b>114,546</b>

*Observation of Regulations.*

Prosecutions during the fiscal year under review numbered 62, a decrease of 27, and the number of confiscations amounted to 53, a decrease of 15. The following is a table of the different offences:

Angling in closed season .....	12
Angling without a permit .....	8
Fishing with gill nets without a license .....	7
Fishing in close season .....	6
Exceeding allowable amount of net .....	6
Having fish in possession during close season .....	5
Fishing in closed waters .....	5
Using illegal apparatus .....	3
Exceeding daily limit of catch .....	2
Buying fish from Indians .....	1
Obstructing free passage of fish with illegal dam .....	1
Using explosives to kill fish .....	1
Obstructing officer in course of duty .....	1
Selling freshly caught whitefish in closed season .....	1
Possession of freshly caught whitefish in close season .....	1
Operating unlawful mesh nets .....	1
Fishing without having nets tagged .....	1
<b>TOTAL .....</b>	<b>62</b>

For some years it has been evident that the greatest number of prosecutions continue to be fishing without the necessary license or permit. Much interest is taken and assistance given each year by the many fish and game associations which carefully watch conditions and assist in a very material way for the safeguarding of the many hundreds of streams. The assistance of the R.C.M.P. is most valuable and greatly appreciated by this Division.

*Irrigation.*

Very few complaints were received during the season regarding the loss of fish through the forty-five irrigation schemes in various parts of the Province. With the exception of three operators, every co-operation possible was received by the Fisheries staff in an endeavor to prevent loss. In the three exceptions referred to no screens were installed in the headgates but necessary action in this respect has been taken to see that the regulations are carried out.

The loss of a few trout at the outlet of one of the reservoirs was reported but on investigation it was found that nothing could be done at this particular point. Suitable screens will be installed, however, at the headgates of the system which will prevent fish entering this reservoir.

The new diversion from the Highwood River into Squaw Coulee and Mosquito Creek has given no cause for complaint as the proper screens were installed at the time the headgates were completed.

#### *Dams and Fishways.*

No difficulties have been experienced during the year in connection with the large number of dams in existence on various streams or rivers throughout the Province.

It has been found through close observation that in some instances these dams have been a benefit to the fisheries. The Canadian Pacific Railway's dam in the Bow River at Bassano prevents large numbers of suckers and pike from ascending the stream. The numbers of these fish which are detrimental to trout fishing are gradually becoming less and consequently trout fishing is improving. The same applies to the Glenmore dam in the Elbow River constructed by the city of Calgary. It was claimed by some that this dam would be detrimental to trout fishing but the opposite has been the result. It has been found that this dam is preventing pike and sucker from ascending from the Bow River and efforts are now being made to remove the few pike still found in the waters above.

There has been some agitation for a fish ladder in the Calgary Power Company's dam in the Bow near the junction of the Ghost River. It was found that an efficient fishway could not be erected in this dam owing chiefly to the fluctuations in water levels in the lake above. A fishway that would be effective at the high water level would be useless when the water was low, and vice versa. On the other hand a channel has been washed out by the water passing through the spillway and has created a natural passage for fish which is much better than anything that could be erected. Large numbers of fish have been seen passing up stream through this channel, and into the lake above the dam when there is an overflow, which is all that can possibly be expected. Indications are that the fishing is improving in the lake above the dam.

Regulations may be necessary to restrict the fishing in this channel within a certain distance of the dam.

#### *Pollution of Streams.*

Little need be said with regard to this phase of the work for close co-operation with field men of the various divisions of the Department has prevented the possibility of any offences being committed. Complaints are still received from the Calgary district regarding pollution of the Bow River but very little action can be taken in the matter particularly as the city is now endeavouring to treat all sewage. The greatest cause for complaint at present is that oil and grease from the washing of cars passes into the sewers, a situation for which there appears to be no immediate remedy.

#### FISH CULTURE

With the continued co-operation of the federal Department of Fisheries and the staff of the game fish hatcheries within the parks, this branch of the work was again carried out in a very satisfactory manner in so far as it applies to the stocking of streams with game fish. Owing to the lack of funds it was, however, found necessary to temporarily discontinue the operation of the whitefish hatchery at Lesser Slave Lake.



The continued drought in the southern part of the Province necessitated very great care being taken in the distribution of fry and fingerlings. Many streams which appeared to be in excellent condition early in the season and which seemed suitable for fry or fingerlings became dangerously low, some drying up altogether. This caused the necessity in many instances of changing the schedule or diverting the allotments for these streams to other more suitable waters. Inspectors and guardians who assist the hatchery superintendents and who are continuously patrolling their territories are in a position to watch closely and advise superintendents as to the conditions of the various streams with the result that loss of fry has been avoided. This condition, however, necessitated a reduction in the number of plantings in some districts as compared with previous seasons which automatically increased them in other waters as a consequence.

The number of plantings during the year from Waterton hatchery was 53, as compared with 65 for the previous period. Banff hatchery totalled 89 as compared with 61 the previous year, an increase of 28. The number from Jasper hatchery in the waters outside the parks was 26 showing an increase of five. A decrease, however, is shown in the total number of fry planted from Jasper due to losses occurring in the hatchery through sudden stoppage in the water supply which was unavoidable.

Details of the distribution from the various hatcheries into waters outside the national parks are as follows:

WATERTON  
RAINBOW TROUT

Name of Waters	Fry	Advanced Fry	Fingerlings, No. 1
Tributaries of Castle River:			
Beaver Mines Creek .....	.....	.....	10,000
Gladstone Creek .....	.....	.....	10,000
Lynx Creek .....	.....	.....	8,500
Gardner Creek .....	.....	.....	8,500
Tributaries of Old Man River:			
Pincher Creek .....	.....	.....	26,275
Tributaries of Crowsnest River:			
Crowsnest Lake .....	.....	20,000	.....
Allison Creek .....	.....	10,000	.....
Byron Creek .....	.....	10,000	.....
Gold Creek .....	.....	10,000	.....
Star Creek .....	.....	5,000	.....
Blairmore Creek .....	.....	10,000	.....
Todd Creek .....	.....	25,000	.....
Tributaries of Willow Creek:			
Lyndon Creek .....	.....	.....	15,000
Patterson Creek .....	.....	.....	5,000
Trout Creek .....	.....	.....	15,000
Burke Creek .....	.....	.....	10,000
Burton Creek .....	.....	.....	5,000
Johnson Creek .....	.....	.....	10,000
North Fork Willow Creek .....	.....	.....	15,000
South Fork Willow Creek .....	.....	.....	15,000
Westrup Creek .....	.....	.....	5,000
Chaffin Creek .....	.....	.....	10,000
Nelson Creek .....	.....	.....	5,000
Ryley Creek .....	.....	.....	5,000
Kuntz Creek .....	.....	.....	5,000
Tributaries of Waterton River:			
South Fork Yarrow Creek .....	.....	5,000	.....
Beaver dams (sec. 22 t. 3 r. 30 w4m)* .....	.....	5,000	.....
Beaver dams (sec. 27 t. 3 r. 30 w4m)* .....	.....	5,000	.....
South Fork Pine Creek .....	.....	15,000	.....
Smith Creek .....	.....	6,000	.....
Shaws Lake .....	.....	1,000	.....

CUTTHROAT TROUT

Tributary of Castle River:			
Mill Creek .....	.....	30,000	.....
Tributaries of Old Man River:			
Beaver dams (sec. 32 t. 10 r. 3 w5m)* .....	.....	40,000	.....
Beaver dams (sec. 8 t. 11 r. 3 w5m)* .....	.....	40,000	.....
Heath Creek .....	.....	15,000	.....
Bobs Creek .....	.....	25,000	.....
Racehorse Creek .....	.....	25,000	.....
Livingstone River .....	.....	25,000	.....
Sharples Creek .....	.....	15,000	.....
Playle Creek .....	.....	5,000	.....

## DEPARTMENT OF LANDS AND MINES

Name of Waters	Fry	Advanced Fry	Fingerlings, No. 1
Adair Creek .....	.....	5,000	.....
Damon Creek .....	.....	5,000	.....
Callum Creek .....	.....	20,000	.....
Beaver Creek .....	.....	30,000	.....
Tributaries of St. Mary's River:			
Lee Creek .....	.....	15,000	.....
Tough Creek .....	.....	15,000	.....
Tributaries of Waterton River:			
Yarrow Creek .....	.....	.....	15,000
Spring Creek .....	.....	.....	5,000
Carpenter Creek .....	.....	.....	20,000
Trail Creek .....	.....	.....	10,000
Drywood Creek .....	.....	.....	25,000
Cottonwood Creek .....	.....	.....	25,000
North Fork Yarrow Creek .....	.....	.....	30,000
TOTALS .....	.....	437,000	313,275

## BANFF

## RAINBOW TROUT

Tributaries of Bow River:			
Norman Lake .....	.....	.....	2,400
Jumping Pound Creek .....	.....	.....	10,000
Muskeg Creek .....	.....	.....	10,000
Sibbald Creek .....	.....	.....	15,000
Spring Creek .....	.....	.....	10,000
Tributaries of the Elbow River:			
Bragg Creek .....	20,000	.....	.....
Crawford Creek .....	5,000	.....	.....
Fullerton Creek .....	5,000	.....	.....
Hidden Creek .....	10,000	.....	.....
Lotts Creek .....	.....	.....	15,000
Mays Creek .....	14,870	.....	.....
McLean Creek .....	20,000	.....	.....
Mickle Creek .....	10,000	.....	.....
Pirmez Creek .....	20,000	.....	.....
Prairie Creek .....	.....	.....	20,000
Ranger Creek .....	.....	.....	10,000
Rennick Creek .....	9,000	.....	.....
Robinson Creek .....	5,000	.....	.....
Stringer Creek .....	10,000	.....	.....
Sylvester Creek .....	.....	.....	20,000
Thomas Creek .....	10,000	.....	.....
Young Creek .....	4,925	.....	.....
Tributaries of Highwood River:			
Cataract Creek .....	.....	.....	16,000
Etherington Creek .....	.....	.....	16,000
Flat Creek .....	.....	.....	19,000
Pekisko Creek .....	.....	.....	19,000
Sullivan Creek .....	.....	.....	19,000
Tributaries of Milk River:			
Battle Creek .....	20,000	.....	.....
Greyburn Creek .....	10,000	.....	.....
Tributary of Old Man River:			
North Willow Creek .....	.....	.....	16,000

## SPECKLED TROUT

Cold Lake .....	86,220	.....
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## CUTTHROAT TROUT

Tributaries of Bow River:			
Bowfort Creek .....	.....	.....	10,000
Bighill Creek .....	.....	.....	30,000
Cold Creek .....	.....	.....	25,000
Gap Creek .....	.....	.....	10,000
Policeman Creek .....	20,000	.....	.....
Spencer Creek .....	.....	.....	10,000
Exshaw Lake .....	.....	.....	30,000
Tributaries of Ghost River:			
Eau Claire Creek .....	.....	.....	18,000
Hay Meadow Creek .....	30,000	.....	.....
Lake Creek (North branch of Ghost River) .....	.....	.....	40,000
Tributaries of Sheep Creek:			
Spring Creek .....	.....	.....	10,000
North Sheep Creek .....	.....	.....	25,000
Fisher Creek .....	.....	.....	25,000
King Creek .....	.....	.....	10,000
South Sheep Creek .....	.....	.....	20,000
Blue Rock Creek .....	.....	.....	10,000
Canyon Creek .....	.....	.....	10,000
Gorge Creek .....	.....	.....	10,000
Horse Creek .....	.....	.....	10,000
Long Prairie Creek .....	.....	.....	10,000

## LOCH LEVEN TROUT

Name of Waters.	Fry	Advanced Fry	Fingerlings, No. 1
<b>Tributaries of Baptiste River:</b>			
Chambers Creek .....	.....	.....	25,000
Lawrence Creek .....	.....	.....	18,000
Ruth Creek .....	.....	.....	12,000
Beaver Lake .....	.....	.....	10,000
<b>Tributaries of Clearwater River:</b>			
Alfred Creek .....	.....	.....	10,000
Muskeg Creek .....	.....	.....	10,000
North Prairie Creek .....	.....	.....	15,000
Cold Creek .....	.....	.....	5,000
Moose Creek .....	.....	.....	5,000
Spring Creek .....	.....	.....	10,000
Sucker Lake .....	.....	.....	10,000
Tay Creek .....	.....	.....	10,000
<b>Tributaries of Red Deer River:</b>			
Horseshoe Lake, No. 1 .....	.....	.....	10,000
Horseshoe Lake, No. 2 .....	.....	.....	10,000
East Stony Creek .....	.....	.....	25,000
Rainy Lake .....	.....	.....	10,000
Raven River .....	.....	.....	25,000
Bearberry Creek .....	.....	.....	10,000
Smith Creek .....	.....	.....	10,000
Elder Creek .....	.....	.....	5,000
Castle Creek .....	.....	.....	2,000
Bear Creek .....	10,000	.....	.....
Gibson Creek .....	.....	.....	3,750
Grant Creek .....	.....	.....	3,000
Little Red Deer River .....	.....	.....	16,760
Dogpound Creek .....	.....	15,000	.....
Swanson Creek .....	.....	5,000	.....
Fallen Timber Creek .....	.....	.....	8,400
Stever Creek .....	.....	.....	6,250
Spring Creek .....	.....	.....	20,000
Twin Springs .....	.....	.....	5,000
Wammick Lake, No. 1 .....	.....	.....	2,500
Wammick Lake, No. 2 .....	.....	.....	2,500
Wammick Lake, No. 3 .....	.....	.....	5,000
Wammick Lake, No. 4 .....	.....	.....	5,000
Wammick Lake, No. 5 .....	.....	.....	5,000
<b>Tributary of North Saskatchewan River:</b>			
Lake Wabamun .....	40,000	.....	.....
<b>Tributary of Battle River:</b>			
Pigeon Lake .....	40,000	.....	.....
<b>TOTALS</b> .....	<b>90,000</b>	<b>330,015</b>	<b>860,560</b>

## JASPER

## RAINBOW TROUT

<b>Tributaries of Embaras River:</b>			
Dummy Creek .....	.....	5,000	.....
Chance Creek .....	.....	5,000	.....
Byron Creek .....	.....	5,000	.....
Mitchell Creek .....	.....	5,000	.....
Mile 35 Creek .....	.....	5,000	.....
Mile 31 Creek .....	.....	5,000	.....
<b>Tributaries of Erith River:</b>			
Halfpenny Creek .....	.....	2,500	.....
Lovett River .....	.....	10,000	.....
Pembina River .....	.....	2,500	.....
Center Creek .....	.....	5,000	.....
Crooked Creek .....	.....	2,500	.....
Rainbow Lake .....	.....	2,500	.....
<b>Tributary of Leyland Creek</b> .....			
Beaver dam .....	.....	5,000	.....
<b>Tributaries of Mary Gregg Creek:</b>			
Cabin Creek .....	.....	5,000	.....
Mary Gregg Lake .....	.....	5,000	.....
<b>Tributaries of McLeod River:</b>			
Watson Creek .....	.....	5,000	.....
Hornbeck River .....	.....	10,000	.....
Sundance Creek .....	.....	10,000	.....
<b>Tributary of Edson River:</b>			
North Fork Edson River .....	.....	10,000	.....
<b>Tributary of McLeod River:</b>			
Trout Creek .....	.....	10,000	.....
<b>Tributary of Sundance Creek:</b>			
Horse Creek .....	.....	5,000	.....
<b>No Outlet:</b>			
Zanzall Lake .....	.....	5,000	.....
Deacon Lake .....	.....	10,000	.....
<b>Tributaries of Trout Creek:</b>			
Five Mile Prairie Creek .....	.....	5,000	.....
Spreen Creek .....	.....	5,000	.....

	Name of Waters.	Fry	Advanced Fry	Fingerlings, No. 1
Tributary of Wolf River:				
	Unnamed creek .....	.....	5,000	.....
	TOTAL .....	.....	150,000	.....

## RECAPITULATION

	Name of Waters.	Fry	Advanced Fry	Fingerlings, No. 1
	Waterton Hatchery .....		437,000	313,275
	Banff Hatchery .....	90,000	330,015	860,560
	Jasper Hatchery .....		150,000	
	TOTALS .....	90,000	917,015	1,173,835

Fry .....	90,000
Advanced fry .....	917,015
Fingerlings, No. 1 .....	1,173,835

Total distribution from the three hatcheries for the fiscal year ended March 31, 1934 .....	2,180,850
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\*Sec.—section, t.—township, r.—range, w.4m.—west of the 4th meridian.

An explanation as to the meaning of fry, advanced fry and fingerlings might not be amiss for those inexperienced in fish culture work. Fry, as classified in hatcheries throughout the Dominion, are fully developed free-swimming fish ready to take food but which have not been systematically fed. Advanced fry are young fish which have been fed for a period of two weeks after they have developed to the free-swimming stage. Number one fingerlings are fish that have been fed from two to eight weeks.

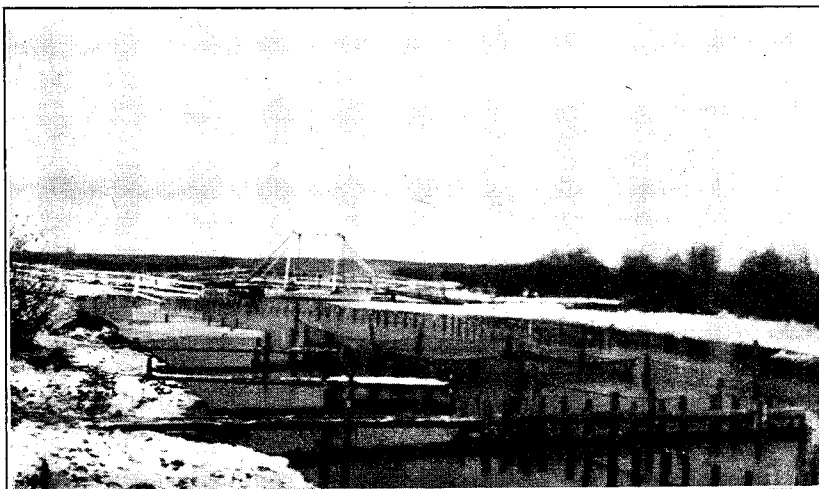
Owing to the shortness of Alberta summer seasons and the necessity of making distribution before the natural food supply has become scarce in the streams, as is generally the case in the fall of the year, it is almost impossible to retain fry and fingerlings in this Province for a longer period.

To be assured of distribution for the 1934 season arrangements were again made during the month of September through the Department of Fisheries, Ottawa, for a supply of eggs for next season's stocking. It was found, however, that owing to the limited capacity of the game fish hatcheries within the parks orders for supplies had to be regulated accordingly. Numbers arranged for next season's distribution were as follows:

Hatchery	Number	Species
Waterton .....	700,000	Rainbow trout eyed eggs
Waterton .....	300,000	Cutthroat trout eyed eggs
Banff .....	450,000	Rainbow trout eyed eggs
Banff .....	400,000	Cutthroat trout eyed eggs
Banff .....	500,000	Loch Leven trout eyed eggs
Banff .....	100,000	Speckled trout eyed eggs
Jasper .....	200,000	Rainbow trout eyed eggs
TOTAL .....	2,650,000	

As previously explained, the Lesser Slave Lake hatchery was not operated during the year, except for the short period from the 1st April, 1933, until the fry hatched during the winter were liberated. The number of eyed whitefish eggs in the Slave Lake hatchery totalled 114,985,000 at the end of March. As these eggs were close to the hatching stage, no further loss occurred after that date and the total number were liberated as fry in Lesser Slave Lake, the distribution being spread over the greater part of that area. Hatching commenced during the week ending April 22nd and was completed during the week ending May 20th. Distribution of the fry began on April 27th and was completed on May 22nd. Immediately following completion of the distribution the equipment was overhauled and cleaned. The machinery was also given necessary attention and the staff, with the exception of the superintendent, was dismissed. During the summer months the superintendent was engaged part time in an examination of a number of streams throughout the district and also in

improving the hatchery grounds and repainting windows and trimmings of the building. He was also engaged at time in assisting the local inspector in enforcing regulations throughout the district and acting as caretaker of the hatchery and equipment.



Whitefish River, 50 miles north of Grouard, in October. Showing traps and nets used in collection of whitefish eggs for the Lesser Slave Lake Hatchery

In addition to the restocking carried on from the various hatcheries the following waters were examined with a view to determining their suitability for fish life or for the introduction of a new species:

Cream Puff Lake	Unknown Creek
Tongue Creek	Martin River
Shaw's Creek	Assineau River
Narrows Creek	Kennedy's Pond
Sterling Lake	Prairie Creek
Cardinal Lake	Lake No. 10
Frederickson's Lake	Little Island Lake
Johnson's Lake	Arthur Lake
Williamson's Lake	Town Lake
McArthur Lake	Lake "C"
Doussault Lake	Richmond Lake
Brightbank Lake	Reid Lake
Duhamel Lake	Ray's Lake
Arnault Lake	Bush Lake
Lily Lake	Hay Lake

Of these examined, four were found to already contain Arctic grayling but were also suitable for trout. Thirteen were found to be suitable for perch and thirteen unsuitable for any class of fish. Those suitable for trout will be stocked eventually with trout fry from one of the hatcheries. Those suitable for perch will be stocked as quickly as possible by transfer of adult fish from other lakes. In addition to the above examination two lakes were stocked by transfer of perch from other lakes.

It is gratifying to again report that the restocking of streams and the introduction of new species of fish into waters of Alberta and the transfer of indigenous fish into barren waters continues to be most successful. Favourable reports are now being received on the introduction of the Loch Leven trout into the tributaries of the Red Deer River and the North Saskatchewan, as well as continued reports on the success of the introduction of rainbow into the streams in the southern part of the Province. Many testimonials are being received from anglers as to the numbers of large sized trout now being found in a great number of the streams which previously had provided indifferent

fishing. Expansion of this work is anticipated as soon as financial conditions improve.

#### BIRD SANCTUARIES AND PUBLIC SHOOTING GROUNDS

Very little difficulty has been experienced during the year in the enforcement of regulations. The general public realizing the value of such areas as nesting grounds, not only for migratory birds but all upland birds as well, appear ready to co-operate by observing the laws which apply. Very few complaints are received regarding poaching.

It is quite evident that bird life will very quickly take advantage of the protection afforded by such sanctuaries as it is noticed that increasing numbers are found each year within their boundaries, the only drawback in this being that crows, magpies, and other destructive birds also learn that they are free from molestation as well.

Due to the continued dry seasons, a condition has developed in many of the sanctuaries and shooting grounds which requires serious consideration. The water areas in two of the sanctuaries and in three of the shooting grounds have gone completely dry, while in many of the others the waters have receded greatly, leaving thousands of acres of dry lake bed, which in many places are becoming badly infested with noxious weeds.

While many varieties of water-fowl, shore birds, waders and gulls—the last named most valuable to the farmer—are found nesting in the vegetation now covering many of the dry areas that are still adjacent to water, and should not, if possible be disturbed, some action will nevertheless become imperative very soon to control the weed menace which has arisen.

The first growth on these dried areas is usually weeds. It is noticed, however, that some which have been dry for a number of years are now producing, where the soil is suitable, heavy growths of wild grass which have smothered out the majority of weeds.

A possible method of combating the weeds on the more recently dried areas in the public shooting grounds might be the granting of grazing and hay permits or perhaps heavy seeding with grass which might eventually give desired results.

#### OPERATION OF BOATS ON LAKES AND RIVERS

Due to the necessity for some control over the operation of motor boats and other small craft on the waters of the Province, regulations were adopted by Order in Council, No. 451, dated May 27th, 1933, responsibility for the administration of which was given to the Fisheries Division.

These regulations becoming effective after motor boat operators had made their provisions for the season no fees were charged for this particular year, but all such owners were instructed as to the requirements before licenses would be granted, reasonable time being given to provide the necessary equipment. The various Fisheries officers in the meantime inspected all such boats and warned operators where necessary as to what was required. At the same time a close check was made on those who in the past were in the habit of operating power boats recklessly to the danger of the public.

Persons operating boats of over five tons displacement came under the federal regulations and were referred to the Department of Marine.

## FISHERIES

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RECORD OF LICENSES ISSUED AND SOLD  
Fiscal Year, April 1st, 1933 to March 31st, 1934

Month	Domestic	Fisher- men's	Commer- cial	Angling Permits	Indian Permits	Total
April .....	11	10	.....	.....	476	497
May .....	65	98	1	31	148	343
June .....	79	27	.....	1,275	72	1,433
July .....	41	23	4	1,511	.....	1,579
August .....	21	53	9	757	1	841
September .....	12	16	.....	753	161	942
October .....	5	12	.....	280	14	311
November .....	20	51	4	152	16	243
December .....	142	146	5	43	16	332
January .....	96	228	1	8	6	339
February .....	12	14	1	7	.....	34
March .....	4	42	1	6	.....	53
TOTALS .....	508	720	26	4,823	910	6,987

In addition to the above, the Forestry Division sold, on behalf of the Fisheries,  
Angling Permits .....

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GRAND TOTAL ..... 7,384

## ITEMIZED REVENUE OBTAINED DURING FISCAL YEAR, 1933-34

Month	Fisher- men's Licenses	Domestic Licenses	Commer- cial Licenses	Angling Permits	Sales	Sundry	Total
April .....	\$ 50.00	22.00	.....	.....	\$ 7.00	\$ 16.66	\$ 95.66
May .....	490.00	130.00	\$ 10.00	\$ 62.25	.....	16.66	708.91
June .....	135.00	158.00	.....	2,554.50	15.10	16.66	2,879.26
July .....	115.00	82.00	40.00	3,040.25	17.50	16.66	3,311.41
August .....	265.00	42.00	90.00	1,528.75	23.70	16.66	1,966.11
September .....	80.00	24.00	.....	1,519.75	35.52	16.66	1,671.93
October .....	60.00	10.00	.....	568.00	20.25	20.16	678.41
November .....	255.00	40.00	40.00	304.00	97.89	16.66	753.53
December .....	730.00	284.00	50.00	86.00	2.50	16.66	1,169.16
January .....	1,140.00	192.00	10.00	16.00	19.50	16.66	1,394.16
February .....	75.00	24.00	10.00	14.00	6.00	16.66	145.66
March .....	215.00	8.00	10.00	12.00	1.00	51.39	297.39
TOTALS .....	\$3,610.00	\$1,016.00	\$260.00	\$9,701.50	\$ 245.96	\$ 238.15	\$15,071.61

## Inspection of Revenue

### REPORT OF THE INSPECTOR OF REVENUE, R. J. DEAN

At the time the control of the natural resources passed from the Dominion to the Province, it was considered expedient, because of the very unsatisfactory conditions of many of the royalty, rental and sale accounts, to appoint an Inspector of Revenue.

It was his duty to look after the interests of the Department in so far as this and other revenue was concerned. He was also required to carry out audits of the books or records of all companies operating on Crown lands paying a royalty to the Government, the coal-mining and oil producing industry being the chief factors in this regard.

On the date of the transfer of the resources a total of 251 active coal-mines and 85 producing gas and oil wells existed in the Province, the books of which had not heretofore been examined by a representative of either the Dominion or Alberta Government. This work alone entailed a very great deal of time and effort, results of which may be found in the different statements contained in this report. Since the above date the number of Alberta mines and wells has considerably increased.

In addition to the foregoing, the work of this branch of the Department includes the following duties:

The carrying out of special investigations and reporting on complaints made by individuals or companies against the Department;

The investigation and report on conflicting applications for leases of Crown lands and any other application for lease or permit of an unusual nature;

The supervising of all collections made by the field inspectors in connection with school lands revenue;

The collections of all ground rentals in the town of Canmore, Alberta, held under lease from the Government;

The collection of arrears of royalty and rental on coal-mining and petroleum and natural gas leases, as well as the securing of returns of operations from delinquent companies.

During the year 1931 well-head sales of Turner Valley naphtha became a very active industry. This fuel, being of an excellent quality and of an exceedingly high specific gravity, could be used without the necessity of refining, scrubbing or other processing as a motor fuel. For this reason the full amount of the Government tax was imposed.

Farmers purchased large quantities of naphtha for industrial purposes. Authorized dealers who could purchase this fuel tax free were now exploiting the industry. They camouflaged the naphtha by mixing it with distillates and sold it wholesale and retail as a motor distillate, tax free.

In an investigation made in 1932 it was discovered that there were seventeen different kinds of motor fuel being sold in the Province, tax free.

Mention of this particular situation is made by reason of the fact that during 1931 and the early part of 1932 many audits covering gasoline tax were made by this Department for the Deputy Provincial Secretary. These audits entailed very little extra work as the revenue in both instances is derived from the sale of the product. The appended figures will reveal results of these audits.



During the fall of 1933 three inspectors were loaned from the Department of Municipal Affairs and were engaged in the collection of school lands revenue in the Edmonton district alone. This undertaking was more or less of an experiment and despite the fact that the field men were faced with adverse weather conditions, the results were so gratifying that the Department decided to extend the collection work to all the land districts, namely, Edmonton, Calgary, Lethbridge and Peace River the following year.

Below is a summary of the collections made by these three inspectors for the months they were engaged in this work:

Total School Lands revenue collected October, November and December, 1933 .....		\$37,785.82
Applied 1933 .....	\$30,820.82	
Applied 1934 .....	6,965.00	
	<hr/>	<hr/>
		\$37,785.82
Total grain taken by assignment .....	3,814.50 bushels	
Deeds of surrender obtained .....	58	

The following figures represent unreported revenue payable to the Government, discovered as a result of the audits carried out by this Department from 1931 to 1933:

Unreported coal tonnage discovered after transfer of resources .....	295,521.81 tons
Revenue represented and collected at 5c and 7c per ton on above .....	\$14,144.64
Unreported royalty collected on sales of oil producing companies at 5 per cent of sales price .....	4,227.93

It might be in order here to give a few of the major reasons for unreported coal tonnage and naphtha sales.

#### *Coal.*

In accordance with the regulations a royalty is payable on all classes of coal mined and sold from Crown lands regardless of the price at which the various grades are sold.

It was found in many instances that mining companies were not paying the Government royalty on sales of slack and nut coal. Others were not paying a royalty on coal supplied officials and employees of the company although the said employees, in many cases, were being charged for the coal. Other companies were not paying a royalty on coal given away in the form of gifts or donations. In some cases coal was being used by mining companies for purposes other than the operation of their plants. All such coal is subject to royalty.

#### *Petroleum and Natural Gas.*

Unreported petroleum and natural gas royalties were found largely in the retail sales of producing wells.

Excessive waste and unauthorized deductions made by the companies were not allowed by the Department.

Products of the wells were paid to lessees holding the drilling rights as royalty in kind in lieu of cash transactions and no Government royalty had been paid thereon.

Products of the wells were given to creditors in settlement of trading accounts and Court judgments no no royalty provided for.

Unauthorized deductions such as storage, insurance, haulage, etc., made by companies, included in cost of operation and charged against royalty, were not allowed by the Department.

A number of smaller companies failed to make returns covering their sales.

#### *Miscellaneous Revenue.*

Illegal coal-mining on Crown lands, gravel permits and royalties, sale of grain grown on Crown lands in trespass, etc., \$642.15.

*Gasoline Tax.*

During 1931 and the early part of 1932 many of the oil companies were labouring under a misapprehension as to this tax unaware that they were responsible for its collection. New wells coming into production charged the prevailing field price for their product not knowing that the Government tax was included in the price.

Authorized gasoline dealers purchased this naphtha from the well-head, blended same with a distillate and sold the new product as tractor fuel, tax free, whereas the Government tax on the sale of the naphtha should have been protected in the first place.

Naphtha was sold tax free to unauthorized dealers who were misrepresenting themselves to the producers. Operating companies failed to make returns of any description covering this tax.

Total unreported gasoline tax collected for Deputy Provincial Secretary.....	\$26,870.80
Additional unreported gasoline tax uncollected at time of audit.....	14,680.35
Gasoline tax discovered owing to the Government of Saskatchewan.....	5,875.65

Revenue statements in detail covering the various Divisions of the Department are compiled and published and are indexed "A" to "M" in the Accounting Division's Section of this report.

## Accounting Division

### REPORT OF THE CHIEF ACCOUNTANT, I. N. MCKINNON

An increased surplus of \$185,072.04 over the previous year was shown on income account for the fiscal year ending March 31, 1934.

Revenue for the year was \$937,095.80, an increase of \$75,618.14; expenditure was \$462,407.61, a decrease of \$109,453.90, leaving a surplus of \$474,688.19.

Total cash received from all sources amounted to \$1,068,650.48, particulars of which are given in statements "A" and "B".

#### LAND PATENTS BRANCH

##### *Homestead Entries.*

Homestead entries granted were 3,706, covering approximately 592,960 acres, an increase of 207 entries from the previous year. Details will be found in statement. "N".

##### *Land Sales.*

Amount of principal collected was \$7,995.53, an increase of \$470.68 over the previous year. Interest amounted to \$4,834.89, a decrease of \$445.98.

Details of collections for this branch are given under statement "D".

#### TIMBER AND GRAZING BRANCH

##### *Timber.*

Receipts for the year showed an increase of \$18,043.69 over the previous year, mostly due to a big increase in the number of railway ties cut.

Timber products manufactured by holders of license and permit berths were as follows:

Lumber manufactured, feet, board measure .....	44,959,769
Railway ties .....	750,142
Piling (lineal feet) .....	18,850
Laths .....	3,059,926
Mine timber (lineal feet) .....	163,619
Logs (lineal feet) .....	2,904

119,327 ties were cut on permits and a further 62,535 under trespass. In addition to the above a considerable quantity of timber was manufactured on school lands and miscellaneous permits, complete details of which are given in the report of the Director of Forestry.

##### *Grazing.*

Receipts from grazing leases and permits were \$39,963.09, an increase of \$2,533.15 over the previous year. Leases in force number 3,492, covering an acreage of 3,118,842 acres.

Details of collections for this branch will be found under statement "E".

#### MINING LANDS BRANCH

##### *Coal.*

Rentals and fees on leases amounted to \$121,962.90, a decrease of \$3,507.29 from the previous year. Royalties on coal mined on leases and sales were \$192, 227.54, an increase of \$50,005.74, which was partially due to a change in policy whereby royalties were made payable monthly instead of quarterly,

resulting in the department collecting royalty on coal mined in January and February, 1934, which formerly would not have been payable until April.

Coal produced on leases and sales totalled 2,703,736 tons. Leases in force were 476, covering an acreage of 162,521.15 acres.

#### *Petroleum and Natural Gas.*

Collections of lease rentals, etc., show a big increase over the previous year totalling \$81,538.52 as against \$42,219.51, an increase of \$39,319.01. Total royalty collected was \$73,548.27, an increase of \$365.31. Leases in force were 3,888 covering an acreage of 850,957.78 acres.

Details of revenue collected by this branch are given in statement "F".

#### SCHOOL LANDS BRANCH

##### *Sales.*

Collections of principal show an increase of \$16,070.42, amounting to \$56,136.23. Interest collected was \$90,772.25, a decrease of \$72,103.56. The decrease in interest collected was partly due to a number of farmers being unable to haul their grain before the end of the fiscal year which will reflect in the collections for the ensuing year. A bonus scheme was put into force during the period covered by this report whereby the Department credited an extra dollar for every dollar paid on account of current or arrears interest. This also affected interest collections as those farmers who were in a position to keep up their payments had their interest charges cut in half and were able to apply more on account of principal. The scheme itself was made retroactive to September 1, 1932, and is to continue until March 31, 1935. The total amount of interest bonus credited under the scheme between September 1, 1932 and March 31, 1934 was \$188,669.45.

The Alberta School Lands Trust Account as at March 31, 1934, amounted to \$15,347,700.27, particulars of which will be found in statement "H".

Arrears interest on sales as at March 31, 1934 was \$1,991,935.83 as compared with \$2,237,264.92 as at March 31, 1933, details of which are given in statement "I".

##### *Cultivation and Grazing Permits.*

Collections amounted to \$32,999.87 of which \$16,562.12 was carried forward to the next fiscal year to provide for outstanding refunds of taxes which the Department has to make to permit holders for the amount of taxes paid on the cultivated areas.

#### FORESTRY BRANCH

Collections of revenue from the various forest reserves amounted to \$43,443.81, an increase of \$10,681.48 over the previous year.

Complete details of receipts will be found in statement "J".

#### FISHERIES BRANCH

Collections amounted to \$15,071.61 as compared with \$14,739.60 for the previous year.

Details of receipts are given in statement "K".

#### THE MINES ACT BRANCH

Receipts for the year amounted to \$6,800.17 as against \$6,968.37 for the preceding year.

Details of receipts are given in statement "L".

## INDEX TO STATEMENTS

- A.—Statement of Cash Receipts by Branches.
- B.—Statement of Cash Receipts From all Sources.
- C.—Statement of Cash Receipts by Agencies.
- D.—Statement of Cash Receipts, Land Patents Branch.
- E.—Statement of Cash Receipts, Timber and Grazing Branch.
- F.—Statement of Cash Receipts, Mining Lands Branch.
- G.—Statement of Cash Receipts, School Lands Branch.
- H.—Statement of School Lands Trust Fund Balance Sheet.
- I.—Statement of Alberta School Lands Sales Revenue Account.
- J.—Statement of Cash Receipts, Forestry Branch.
- K.—Statement of Cash Receipts, Fisheries Branch.
- L.—Statement of Cash Receipts, Administration of The Mines Act Branch.
- M.—Statement of Collections on Tax Recovery Lands.
- N.—Statement of Homestead Entries Granted.
- O.—Statement of Statistical Summary of Nationalities of Homestead Entrants.

## STATEMENT A.

## STATEMENT OF CASH RECEIPTS BY BRANCHES

For Period April 1, 1933 to March 31, 1934

Land Patents Branch .....	\$ 74,860.28
Timber and Grazing Branch .....	175,335.02
Mining Lands Branch .....	472,350.88
School Lands Branch .....	241,352.11
Forestry Branch .....	43,443.81
Fisheries Branch .....	15,071.61
Petroleum and Natural Gas Division .....	1,972.02
Administration of The Mines Act Branch .....	6,800.17
Administration Revenue (Miscellaneous Fees) .....	566.60
Tax Recovery Branch .....	10,259.03
Total Cash Receipts Allocated .....	\$1,042,011.53
Unapplied receipts and moneys subject to refund, carried forward from previous year .....	\$26,737.56
Less Suspense applied and refunded .....	98.61
	<u>26,638.95</u>
TOTAL CASH RECEIPTS .....	<u>\$1,068,650.48</u>

STATEMENT B.

## STATEMENT OF CASH RECEIPTS FROM ALL SOURCES

From April 1, 1933 to March 31, 1934

## INCOME ACCOUNT:

	Gross Receipts	Refunds	Net Revenue
Homestead Fees .....	\$ 37,410.00	\$ 70.00	\$ 37,340.00
Improvement Collection Fees .....	1,662.55		1,662.55
Unclaimed Improvements .....	31.09		31.09
Cancellation Fees .....	2,708.00	8.00	2,700.00
Filing Authority Fees .....	3,152.02	6.00	3,146.02
General Sales: Interest .....	4,834.89		4,834.89
Cultivation Fees, Rentals, etc .....	584.70	267.72	316.98
Surface Rentals .....	2,821.70		2,821.70
Canmore Rental Account .....	1,026.67	7.67	1,019.00
Land Patents Sundry .....	5,561.47	157.50	5,403.97
Fur Farm Fees and Rentals .....	120.60		120.60
Timber Permits, Fees, Dues, etc. ....	155,288.17	1,469.39	153,818.78
Grazing Fees, Rentals, etc. ....	52,996.92	818.20	52,178.72
Hay Permits, Fees, Dues, etc. ....	3,384.92	105.63	3,279.29
Timber and Grazing Miscellaneous .....	2,934.74		2,934.74
Coal Mines Act Sundry Revenue .....	4,954.89	40.00	4,914.89
Coal Fees, Rentals, etc. ....	122,507.90	1,530.00	120,977.90
Coal-mining Royalty .....	193,527.82		193,527.82
Petroleum and Natural Gas Fees, Rentals, etc.	81,648.52	203.42	81,445.10
Petroleum and Natural Gas Royalty .....	73,548.27		73,548.27
Petroleum and Natural Gas Drilling Permits .....	95.00		95.00
Quarrying Lease Fees and Rentals .....	1,772.87	45.00	1,727.87
Mining Lands Sundry Revenue .....	1,487.26		1,487.26
Fishing Licenses .....	4,886.00		4,886.00
Angling Permits .....	10,619.50		10,619.50
Fisheries Sundry Revenue .....	484.11		484.11
Administration Sundry Revenue .....	566.60	40.60	526.00
School Lands Sales Interest .....	90,772.25	12.48	90,759.77
School Lands Miscellaneous .....	80,201.31	2,389.37	77,811.94
Reimbursement of Salaries and Expenses .....	127.29		127.29
Turner Valley Gas Conservation Board .....	1,443.25		1,443.25
Tax Recovery Office Fees .....	1,186.50	81.00	1,105.50
<b>TOTAL INCOME ACCOUNT.....</b>	<b>\$ 944,347.78</b>	<b>\$ 7,251.98</b>	<b>\$ 937,095.80</b>
<b>CAPITAL ACCOUNT:</b>			
Land Sales: Principal .....	7,995.53	57.28	7,938.25
<b>TOTAL INCOME AND CAPITAL ACCOUNTS .....</b>	<b>\$ 952,343.31</b>	<b>\$ 7,309.26</b>	<b>\$ 945,034.05</b>
<b>UNAPPLIED RECEIPTS CARRIED FORWARD:</b>			
(Subject to Refund)			
Improvements .....	18,960.59	4,534.19	14,426.40
Suspense .....	9,457.33		9,457.33
School Lands Cultivation Crop Shares .....	21,370.34	4,808.22	16,562.12
Land Patents Cultivation Crop Shares .....	515.39	36.99	478.40
	<b>\$1,002,646.96</b>	<b>\$ 16,688.66</b>	<b>\$ 985,958.30</b>
<b>TRUST ACCOUNTS:</b>			
School Lands Trust Fund .....	56,136.23		56,136.23
Homesteaders' Trust Moneys .....	794.76	83.90	710.86
Tax Recovery Lands Trust Account .....	9,072.53		9,072.53
<b>TOTAL CASH RECEIPTS .....</b>	<b>\$1,068,650.48</b>	<b>\$ 16,772.56</b>	<b>\$1,051,877.92</b>

STATEMENT C.

## STATEMENT OF CASH RECEIPTS BY AGENCIES

April 1, 1933 to March 31, 1934

	Land Patents Branch	Timber and Grazing Branch	Mining Lands Branch	School Lands Branch	Tax Recovery Branch	Total
Edmonton .....	\$ 38,655.97	\$123,568.86	\$163,891.91	\$114,894.80	\$ 145.89	\$441,156.53
Calgary .....	11,700.20	18,623.49	233,029.32	82,907.17	480.55	346,740.73
Lethbridge .....	10,954.09	24,171.83	74,327.36	32,627.24	9,555.20	151,635.72
Peace River .....	13,550.02	8,970.84	1,103.19	10,888.95	77.39	34,590.39
	<b>\$ 74,860.28</b>	<b>\$175,335.02</b>	<b>\$472,350.88</b>	<b>\$241,318.16</b>	<b>\$ 10,259.03</b>	<b>\$974,123.37</b>

N.B.—Moneys which were paid direct to Administration Office have been allocated to the Agency concerned.

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## STATEMENT D.

### LAND PATENTS BRANCH STATEMENT OF CASH RECEIPTS

April 1, 1933 to March 31, 1934

	Edmonton	Calgary	Lethbridge	Peace River	Total
Homestead Fees .....	\$21,970.00	\$ 5,330.00	\$ 3,200.00	\$ 6,910.00	\$37,410.00
Unclaimed Improvements .....	31.09				31.09
Improvements .....	5,573.09	553.00	1,037.30	3,641.15	10,804.54
Cancellation Fees .....	1,872.00	128.00	18.00	690.00	2,708.00
Filing Authority Fees .....	1,390.00	622.00	544.02	596.00	3,152.02
General Sales: Principal .....	3,878.40	903.11	2,654.21	559.81	7,995.53
General Sales: Interest .....	1,449.13	992.99	1,842.60	550.17	4,834.89
Cultivation Fees, Rentals, etc. ....	39.09	316.38	509.62		865.09
Surface Rentals .....	147.86	227.99	137.00		512.85
Canmore Rental Account .....		1,026.67			1,026.67
Land Patents Miscellaneous .....	1,809.79	1,566.36	1,011.34	216.75	4,604.24
Homesteaders' Trust Monies .....	445.52	33.70		315.54	794.76
Fur Farm Fees and Rentals .....	50.00			70.60	120.60
	<u>\$38,655.97</u>	<u>\$11,700.20</u>	<u>\$10,954.09</u>	<u>\$13,550.02</u>	<u>\$74,860.28</u>

N.B.—Moneys which were paid direct to Administration Office have been allocated to the Agency concerned.

## STATEMENT E.

### TIMBER AND GRAZING BRANCH STATEMENT OF CASH RECEIPTS

April 1, 1933 to March 31, 1934

	Edmonton	Calgary	Lethbridge	Peace River	Total
Timber: Fees, Dues, Royalty, etc. ....	\$117,782.66	\$ 5,871.60	\$ 63.85	\$ 6,811.03	\$130,529.14
Grazing: Fees, Rentals, etc. ....	2,640.89	11,885.56	24,093.48	1,343.16	39,963.09
Hay: Fees, Dues, etc. ....	1,892.58	453.28	14.50	816.65	3,177.01
Timber and Grazing Miscellaneous....	1,252.73	413.05			1,665.78
	<u>\$123,568.86</u>	<u>\$18,623.49</u>	<u>\$24,171.83</u>	<u>\$ 8,970.84</u>	<u>\$175,335.02</u>

N.B.—Moneys which were paid direct to Administration Office have been allocated to the Agency concerned.

## STATEMENT F.

### MINING LANDS BRANCH STATEMENT OF CASH RECEIPTS

April 1, 1933 to March 31, 1934

	Edmonton	Calgary	Lethbridge	Peace River	Total
Coal Fees, Rentals, etc. ....	\$ 64,682.28	\$42,801.45	\$13,841.45	\$ 637.72	\$121,962.90
Coal Royalty .....	71,252.92	81,907.76	38,864.81	202.05	192,227.54
Petroleum and Natural Gas: Fees, Rentals, etc. ....	26,366.68	35,486.69	19,681.65	3.50	81,538.52
Petroleum and Natural Gas: Royalties .....	34.40	72,052.27	1,461.60		73,548.27
Quarrying Fees, Rentals, etc. ....	802.10	592.30	138.55	239.92	1,772.87
Mining Lands Miscellaneous .....	752.63	188.85	339.30	20.00	1,300.78
	<u>\$163,891.01</u>	<u>\$233,029.32</u>	<u>\$74,327.36</u>	<u>\$ 1,103.19</u>	<u>\$472,350.88</u>

N.B.—Moneys which were paid direct to Administration Office have been allocated to the Agency concerned.

## STATEMENT G.

### SCHOOL LANDS BRANCH STATEMENT OF CASH RECEIPTS

April 1, 1933 to March 31, 1934

	Edmonton	Calgary	Lethbridge	Peace River	Administration Office	Total
Sales: Principal .....	\$ 27,225.58	\$22,207.02	\$ 3,446.50	\$ 3,257.13		\$ 56,136.23
Sales: Interest .....	54,021.57	26,076.75	6,442.06	4,231.87		90,772.25
Cultivation Fees, Rentals, etc. ....	17,006.77	12,080.14	2,177.06	1,735.90		32,999.87
License of Occupation and Special Leases...	131.00	29.84	30.00	5.00		195.84
Timber Permits, Fees, Dues, etc. ....	6,142.85	283.46	15.50	45.80		6,487.61
Grazing Fees, Rentals, etc. ....	5,695.49	10,354.29	8,171.19	1,398.75		25,619.72
Hay Fees, Dues, etc. ....	766.01	136.50	25.75	204.50		1,132.76
Coal Fees, Rentals, etc. ....	214.50	3,001.28	2,296.23			5,512.01
Coal-mining Royalties....	2.40	1,919.78	7,597.95			9,520.13
Petroleum and Natural Gas: Fees, Rentals, etc. ....	3,582.03	6,378.86	2,412.00			12,372.89
Petroleum and Natural Gas: Royalties .....	46.60	287.04				333.64
Miscellaneous .....	60.00	152.21	13.00	10.00	\$ 33.95	269.16
	<u>\$114,894.80</u>	<u>\$82,907.17</u>	<u>\$32,627.24</u>	<u>\$10,888.95</u>	<u>\$ 33.95</u>	<u>\$241,352.11</u>

N.B.—Moneys which were paid direct to Administration Office have been allocated to the Agency concerned.

ALBERTA SCHOOL LANDS TRUST FUND  
BALANCE SHEET—MARCH 31, 1934

STATEMENT H.

ASSETS		
Cash in Bank and on Hand.....	\$	8,135.05
Investments:		
Dominion of Canada Debentures .....		9,729,634.98
Accrued Interest .....		325.79
Accounts Receivable:		
Provincial Treasurer Income Account .....	\$	14,778.09
Undue Principal .....		3,400,085.46
Arrears Principal .....		2,194,749.94
		<u>5,609,613.49</u>
		<u>\$15,347,709.31</u>
LIABILITIES		
Alberta School Lands Trust Account .....	\$	15,347,700.27
Suspense .....		9.04
		<u>\$15,347,709.31</u>

ALBERTA SCHOOL LANDS SALES  
REVENUE ACCOUNT

STATEMENT I.

FOR THE PERIOD APRIL 1, 1933 to MARCH 31, 1934

Arrears Interest as at March 31, 1933 .....	\$2,237,264.92	
Interest charged during period .....	504,380.56	
Previous Year Refunds .....	323.00	
Amount owing to School Lands Trust Fund for adjustments between Principal and Interest made during period .....	14,779.39	
Cash Collections during period .....		\$ 90,759.77
Interest Bonus granted during period .....		188,669.45
Interest on Cancelled Sales written off .....		483,382.82
Arrears interest as at March 31, 1934 .....		1,991,935.83
	<u>\$2,756,747.87</u>	<u>\$2,756,747.87</u>

## FORESTRY SERVICE

STATEMENT J.

## STATEMENT OF CASH RECEIPTS FROM FOREST RESERVES

April 1, 1933 to March 31, 1934

LAND PATENTS BRANCH:		
Surface Rentals .....		\$ 2,308.85
Miscellaneous Use Permits .....		947.23
TIMBER AND GRAZING BRANCH:		
Timber Fees, Dues, etc. ....		24,759.03
Grazing Fees, Rentals, etc. ....		13,033.83
Hay Fees, Dues, etc. ....		207.91
Miscellaneous .....		1,268.96
FISHERIES BRANCH:		
Angling Permits .....		918.00
		<u>\$43,443.81</u>

## FISHERIES BRANCH

STATEMENT K.

## STATEMENT OF CASH RECEIPTS

April 1, 1933 to March 31, 1934

Angling Permits .....	\$ 9,701.50
Fishing Licenses .....	4,886.00
Miscellaneous .....	484.11
	<u>\$15,071.61</u>

ADMINISTRATION OF THE MINES ACT BRANCH  
STATEMENT OF CASH RECEIPTS

STATEMENT L.

April 1, 1933 to March 31, 1934

Certificate Fees .....	\$1,244.50
Sale of Report Books .....	1,056.07
Coal Sales Act, Registration Fees .....	55.00
Coal Leases (Road Allowance) Rental .....	545.00
Coal Leases (Road Allowance) Royalty .....	1,300.28
Examination Fees .....	1,332.00
Miscellaneous .....	1,267.32
	<u>\$6,800.17</u>



## ACCOUNTING DIVISION

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## STATEMENT M.

## STATEMENT OF COLLECTIONS ON TAX RECOVERY LANDS

April 1, 1933 to March 31, 1934

Special Leases .....	\$ 12.84
Improvements .....	1,202.85
Cultivation Rentals, etc. ....	3,161.79
Miscellaneous Rentals .....	66.70
Grazing Rentals, etc. ....	4,504.10
Timber Permits .....	33.50
Hay Permits .....	85.75
Tax Recovery Sundry Revenue .....	5.00
	<u>\$ 9,072.53</u>
Office Fees .....	1,186.50
	<u>\$10,259.03</u>

## STATEMENT N.

## HOMESTEAD ENTRIES GRANTED

April 1, 1933 to March 31, 1934

	Homesteads	Second Homesteads	Soldier Grants	Total	Entries to Women
Edmonton Land Agency .....	1,923	255	19	2,197	536
Calgary Land Agency .....	326	206	1	533	132
Lethbridge Land Agency .....	125	189	2	316	87
Peace River Land Agency .....	610	46	4	660	256
	<u>2,984</u>	<u>696</u>	<u>26</u>	<u>3,706</u>	<u>1,011</u>

Had Previous Entry—462.

## STATEMENT O.

## STATISTICAL SUMMARY OF NATIONALITIES OF HOMESTEAD ENTRANTS

April 1, 1933 to March 31, 1934

Country of Origin	No. of Entries	No. of Souls
Canada .....	1,208	3,303
England .....	221	786
Scotland .....	74	250
Ireland .....	33	124
Wales .....	12	35
United States .....	444	1,611
Africa .....	2	4
Australia .....	1	5
Austria .....	48	192
Belgium .....	5	17
Czecho-Slovakia .....	65	223
Denmark .....	25	61
Estonia .....	1	4
Finland .....	6	18
France .....	6	24
Germany .....	72	191
Greece .....	1	5
Holland .....	7	21
Hungary .....	22	93
Iceland .....	2	2
Italy .....	6	23
Jugo-Slavia .....	9	29
Lithuania .....	16	37
Newfoundland .....	2	12
Norway .....	63	224
Poland .....	240	801
Roumania .....	14	45
Russia .....	69	330
Serbia .....	1	1
Sweden .....	53	150
Switzerland .....	9	16
Syria .....	2	15
Ukrania .....	245	898
TOTALS .....	<u>2,984</u>	<u>9,550</u>

